NORTH EURASIA CLIMATE CENTRE

WMO RA VI
WMO RA II
RCC-Network

SEASONAL FORECAST BULLETIN

WINTER 2015-2016

http://neacc.meteoinfo.ru

TABLE OF CONTENTS

Part I: The background information

1. Introduction: forecast objects
2. Physical assumptions
3. Meteorological Services
4. NEACC: The general information

Part II: Seasonal forecasts

1. Oceanic Forecasts: Sea Surface Temperature (SST)
2. Atmosphere: General circulation
3. Temperature and precipitation: North Eurasia and areas under consideration
4. Verification

Summary

PART I
THE BACKGROUND INFORMATION

INTRODUCTION: FORECAST OBJECTS

Seasonal forecasts is occupied a special place in the activity of world meteorological centers. A hydrodynamic theory of large-scale atmospheric processes involve complex issues, one of which is the issue of predictability.
According to the limit of predictability, we can talk only about getting as much useful information about the statistical characteristics of meteorological conditions for each season and geographical region. Hardly ever made people a chance to answer the question: "Will be a rain in the given place at the given day of next month or season?"
The task of seasonal forecasts is reduced to the definition of

global circulation anomalies (El Niño - Southern Oscillation - ENSO , monsoons, planetary waves),

averaged over a given time interval (month, season) meteorological fields or weather characteristics (mainly temperature and precipitation),

probability of three equiprobable categories for main meteorological characteristics.

PHYSICAL ASSUMPTIONS

The practical predictability interval is 5-7 day. It may be increased up to 2 – 3 weeks depending on a season, region and stability of atmospheric circulation.

The first kind of *predictability* is, firstly, restricted by sensitvity to uncertainty of initial conditions, and, secondly, by branching because of bifurcation in nonlinear systems. Even small disturbances (similar to a wave of wings butterflies) can change results of integration of General Circulation Models (GCM).

Predictability of the second kind, in which the object is to predict the evolution of the statistical properties of the system in response to changes in external forcings over time. Predictability of the second kind is essentially a boundary value problem, requiring good information on all boundary conditions which might influence system over time, e.g., variations in sea surface temperature, a surface of a land (an ice, a snow cover and humidity of ground). These parameters are more inertial that is why it is easier to predict environments. The other important external conditions are luminosity of the Sun, a content of hotbed gases, volcanic eruption, etc.. The predictability of the second kind defines possibilities of the forecast of large-scale structures of atmospheric circulation, as well as statistical characteristics of meteorological fields on seasonal and longer intervals of time.

METEOROLOGICAL SERVICES

Multi Model Forecasts use data from several sources to produce highly accurate deterministic and probabilistic forecasts. Multimodel seasonal forecasts are made in some world meteorological centers and have, basically, research character.

The North EurAsia Climate Centre (NEACC) was established by the Intergovernmental Council for Hydrometeorology of the Common wealth of Independent States (CIS – Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, the Russian Federation, Tajikistan, Turkmenistan, Uzbekistan and Ukraine) at its 18th Session held in Dushanbe, Tajikistan, 4-5 April 2007- http://seakc.meteoinfo.ru

The APEC Climate Center - APCC ((Busan, Korea)- http://www.apcc21.net/eng/service/fore/lmon/japcc030101_lst.jsp

The **EUROSIP** forecasting system is the operational monthly production of 7- month 41-member forecasts by ECMWF, Met Office, Météo-France and NCEP- http://www.ecmwf.int/products/forecasts/d/charts.

The International Research Institute for Climate and Society (The IRI's) (США)- http://iri.columbia.edu.

LC MMELRF (WMO Lead Centre for MME LRF) - http://www.wmolc.org

In addition we use the information of
Hydrometeorological centre of Russia, Main Geophysical Observatory (MGO), ECMWF, CPC (CFS), Météo-France, Tokyo Climate Centre (TCC), World Climate Service (W.C.S.) - http://www.worldclimateservice.com

NEACC: ESTABLISMENT AND DESIGNATION

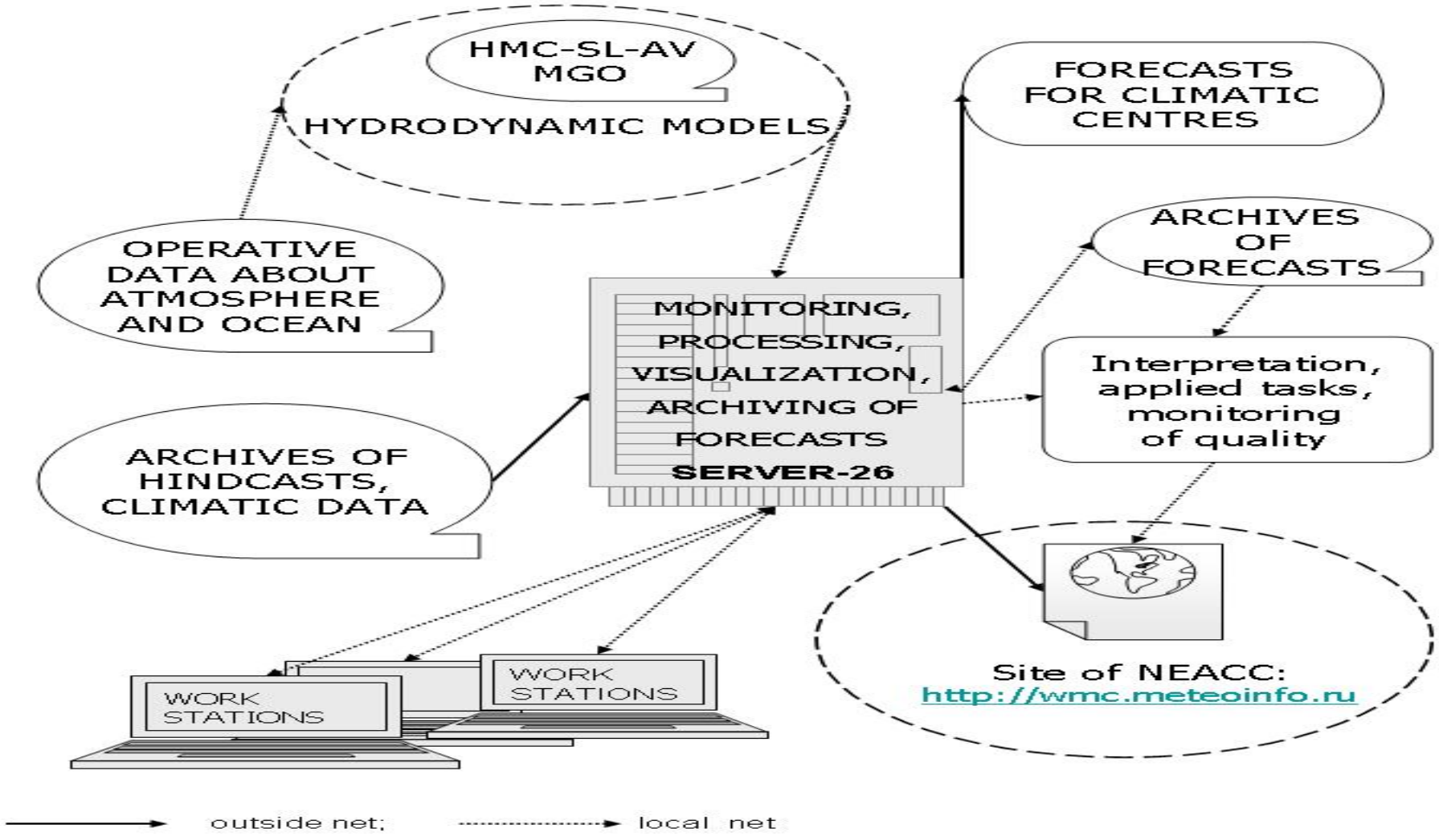
The North EurAsia Climate Centre (NEACC) was established by the Intergovernmental Council for Hydrometeorology of the Common wealth of Independent States (CIS – Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, the Russian Federation, Tajikistan, Turkmenistan, Uzbekistan and Ukraine) at its 18th Session held in Dushanbe, Tajikistan, 4-5 April 2007.

For RA-VI Region NEACC works as one of Long-Range Forecast nodes of the RA-VI Regional Climate Network.
For RA-II Region NEACC works as a Multifunctional Regional Climate Center.

Area of responsibility

http://neacc.meteoinfo.ru (English)
http://seakc.meteoinfo.ru (Russian)

NEACC: THE PROCESSING COMPLEX



NEACC: THE FORECAST MODELS DISCRIPTION

The Semi-Lagrangian 28-level atmospheric prognostic global model **(SL-AV)** developed at the Hydrometeorological centre of Russia and the Institute of Numerical Mathematics of the Russian Academy of Sciences is in active operational use. The model has a spatial resolution of 0.9°x0.72°, L28. Source of atmospheric initial conditions are NCEP Reanalysis 2 (hindcast) / HMC data assimilation system (forecast). Ensemble size for the hindcasts is 10. Ensemble size for the forecast is 20.
The forecast ensemble is configured by the original and perturbed (breeding of fast growing modes) analysis fields from the date 2 days prior to current month. Source of ocean initial conditions is Reynolds-Smith OI. SSTs are taken 3 days before the forecast period.

The model of Voeikov Main Geophysical Observatory (MGO) - T 63 (1.9°×1.9°, L25).
Ensemble size for the forecast is 10. The forecast ensemble is configured by the original and perturbed analysis fields of the Hydrometeorological centre of Russia. SSTs are taken from the inertial forecasts.

The maps of temperature and precipitation forecasts from individual Atmospheric General Circulation Models of Hydrometeorological centre of Russia and MGO are placed at the site of NEACC. The multi-model seasonal forecasts are presented too.

Experiments on the basis of coupled model of an atmosphere and ocean of the Hydrometeorological centre of Russia and the Institute of Numerical Mathematics of the Russian Academy of Sciences are carried out.

NEACC: THE FORECAST OUTPUT

At present HMC and NEACC produce:

Probabilistic forecasts of three equiprobable categories for surface air temperature, precipitation rate, 500 hPa height, air temperature at 850 hPa level, and mean sea level pressure with zero and 1 month lead time;

Deterministic forecasts of three seasonal and monthly mean values of meteorological variables (ensemble averages and anomalies) with zero and 1 month lead time;

Forecasts of indices of the atmospheric circulation;

Outlook of forecasts of NEACC and forecasts maps of Multi Model Forecasts Meteorological Services: **the APEC Climate Center – APCC,** the **EUROSIP** forecasting system, **the International Research Institute for Climate and Society (The IRI's), LC MMELRF (WMO Lead Centre for MME LRF).**

NORTH EURASIA CLIMATE CENTRE

Main products and textual summary outlook regularly allocated on the web-site

Long-Range Forecasts - Windows Internet Explorer

http://neacc.meteoinfo.ru/forecast

Файл Правка Вид Избранное Сервис Справка

Избранное | Рекомендуемые сайты | Коллекция веб-фрагме... | Форма обратной связи

Long-Range Forecasts

Страница | Безопасность | Сервис

North Eurasia Climate Centre

search...

NEACC | Long-Range Forecasts | Forecast Verifications | Monitoring | Data | Research | Training | Contacts and Links

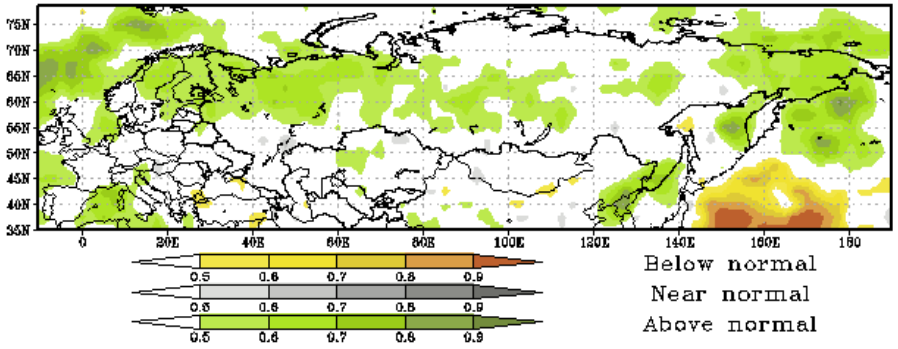
- SEASONAL OUTLOOK (in pdf-format)

Hi ravi,

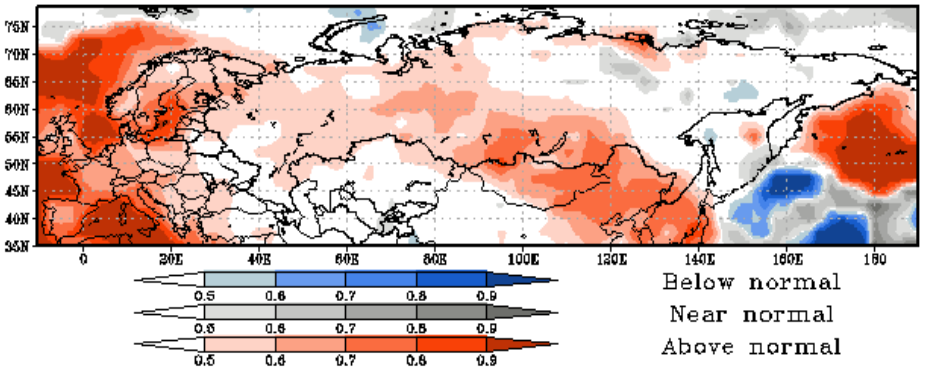
LOG OUT

Long-Range Forecasts

Composite probabilities of categorical forecast outcomes for
Precipitation seasonal anomalies. Producer: HMC+MGO
Forecast period: November_December_January_2014



Composite probabilities of categorical forecast outcomes for
T2m seasonal anomalies. Producer: HMC+MGO
Forecast period: November_December_January_2014



http://neacc.meteoinfo.ru

NORTH EURASIA CLIMATE CENTRE

INDICES

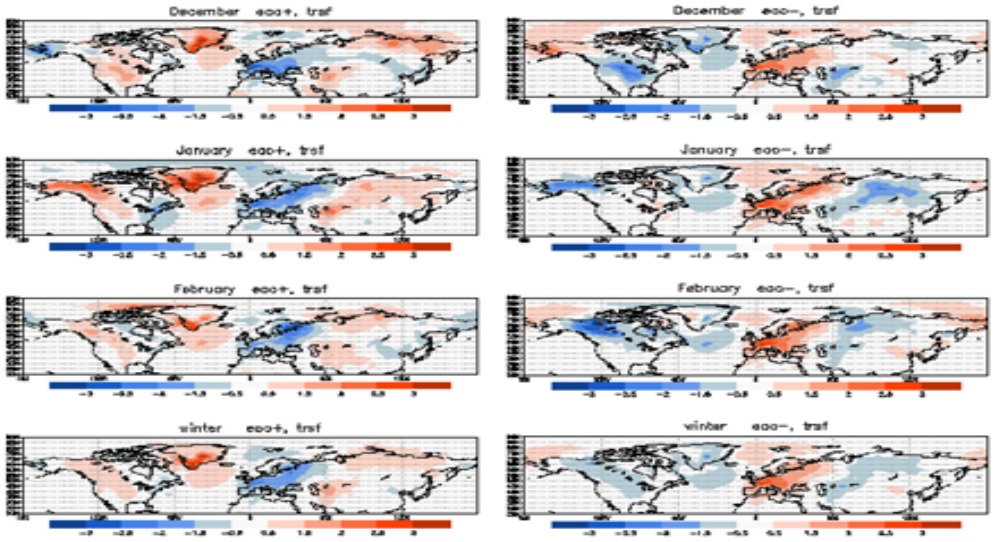
North Eurasia Climate Centre

NEACC | Long-Range Forecasts | Forecast Verifications | Monitoring | Data | Research | Training | Contacts and Links

Indices of Circulation

Composites (NCEP/NCAR Reanalysis -2)

Indices: EA | Season: Winter | Parameter: T at a height of 2 m



Figs. (left) and figs. (right) are the composites of the meteorological fields for the positive and negative phase of index respectively

White areas are not significant at 99% level of confidence.

The Model of Hydrometeorological centre of Russia Forecast

index	NOVEMBER, DECEMBER 2015, JANUARY, FEBRUARY 2016					
	1 month	2 month	3 month	4 month	1 сезон	2 season
EA	-0,4	-1,05	-0,58	0,09	-0,88	-0,66
WA	1,45	1,12	0,09	0,57	0,88	0,37
EU	1,51	0,98	1,4	1,76	1,32	1,35
WP	-0,96	0,25	-0,76	-0,91	-0,27	-0,23
PNA	0,24	0,62	0,36	0,16	0,61	0,54
NAO	-0,27	0,16	0,15	0,31	-0,04	0,25
POL	-1,18	-1,04	-0,12	-0,83	-0,81	-0,54
AOS	-0,24	0,09	-0,91	-0,6	-0,35	-0,47

Red (blue) represents the positive (negative) phase of index

Designation

1. EA - East Atlantic Oscillation
2. WA - West Atlantic Oscillation
3. EU - Eurasia Pattern
4. WP - West Pacific Oscillation
5. PNA - Pacific – North American Patte
6. NAO - North Atlantic Oscillation
7. POL - Polar Oscillation
8. AOS - Arctic Oscillation

Quartile Analysis of Indices

Index	Q1 (25%)	Q3 (75%)
EA	-0.493	0.485
WA	-0.559	0.494
EU	-0.452	0.458
WP	-0.544	0.501
PNA	-0.386	0.404
NAO	-0.487	0.632
POL	-0.487	0.632
AOS	-0.884	0.87

http://neacc.meteoinfo.ru

PART II
SESONAL FORECASTS

SEA SURFACE TEMPERATURE (SST)

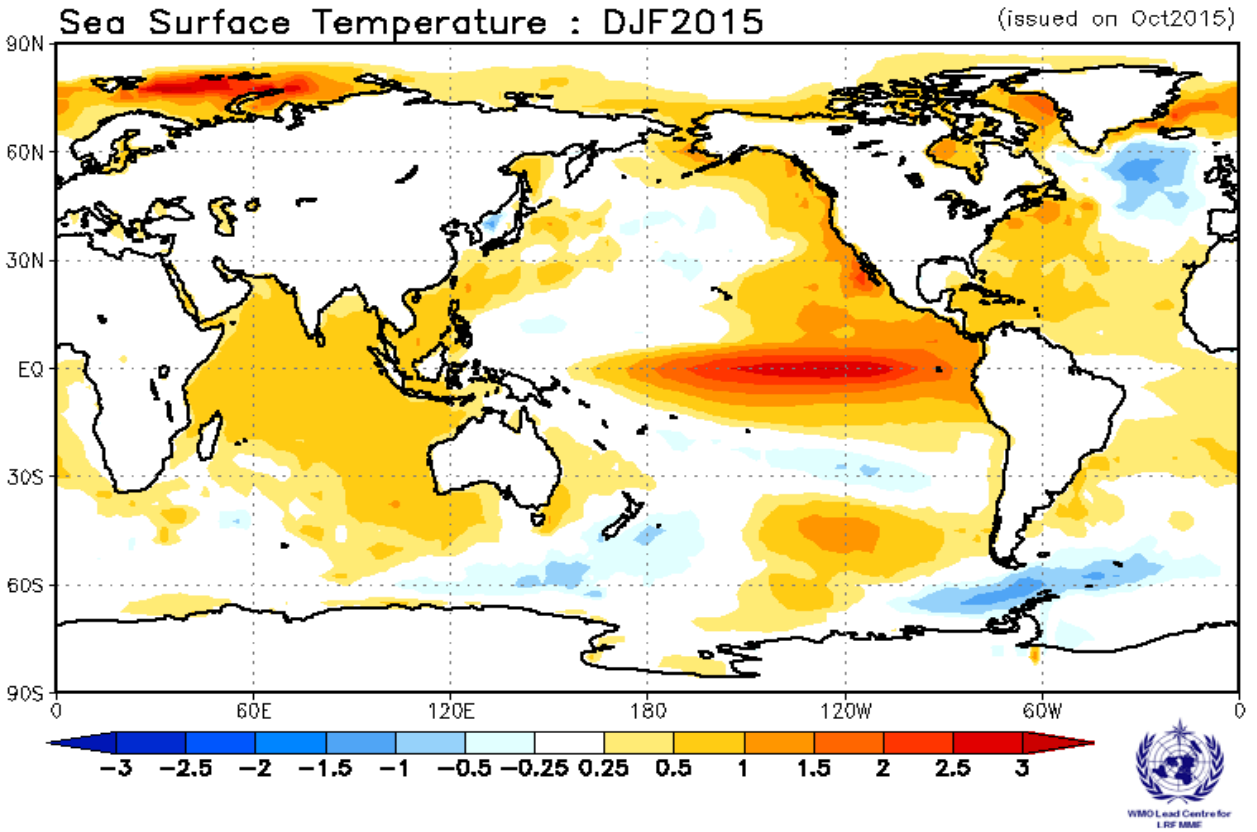
LC MMELRF-WMO Lead Centre for MME LRF

ПРОИЗВОДИТЕЛИ:

- Seul
- Washington
- Toulouse
- Exeter
- CPTEC
- ECMWF
- Melbourne
- Montreal

COMPOSITES

December 2015 – fabruary 2016

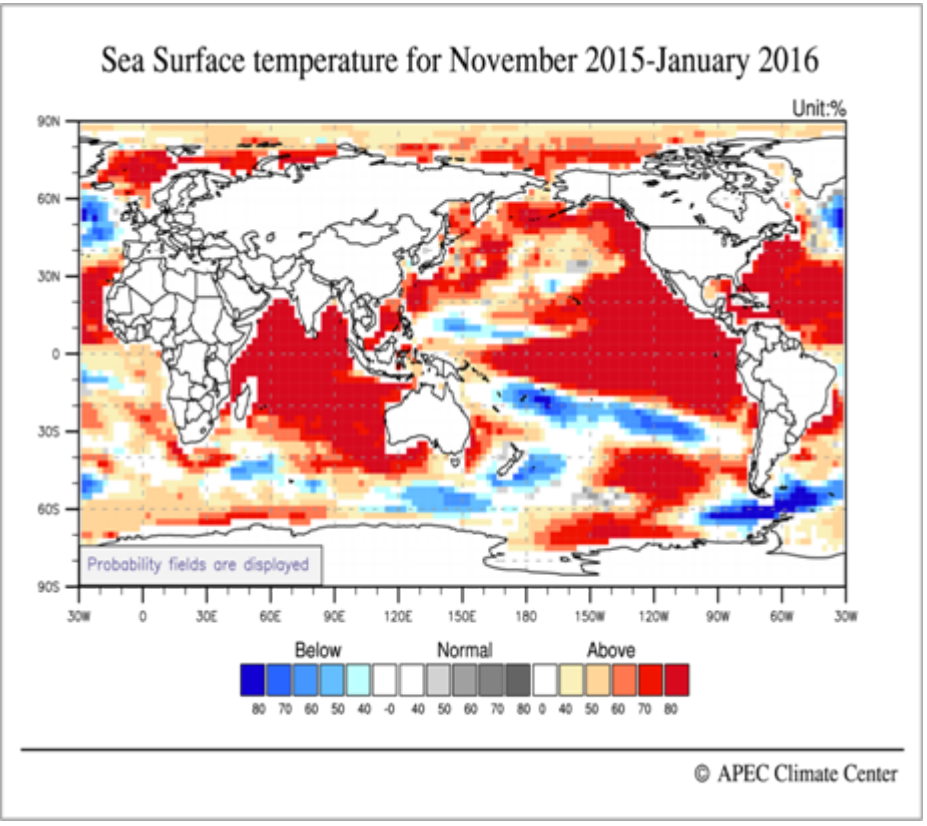


https://www.wmolc.org/

OCEANIC FORECASTS
SEA SURFACE TEMPERATURE (SST)

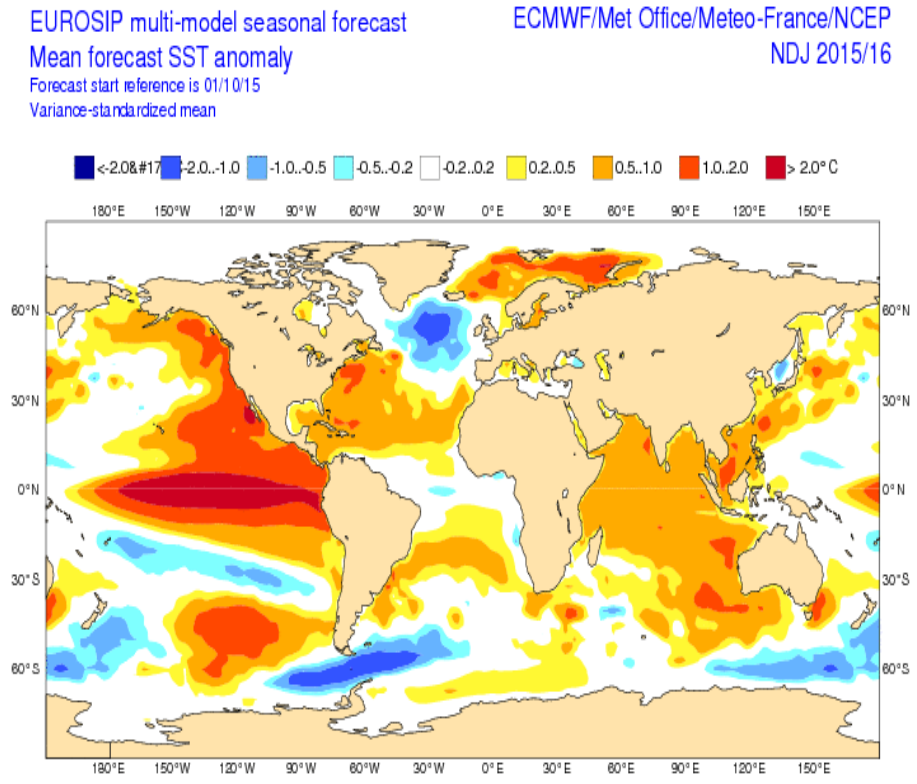
November 2015- January 2016

APCC



http://www.apcc21.org/eng/service/6mon/ps/japcc030703.jsp

EUROSIP

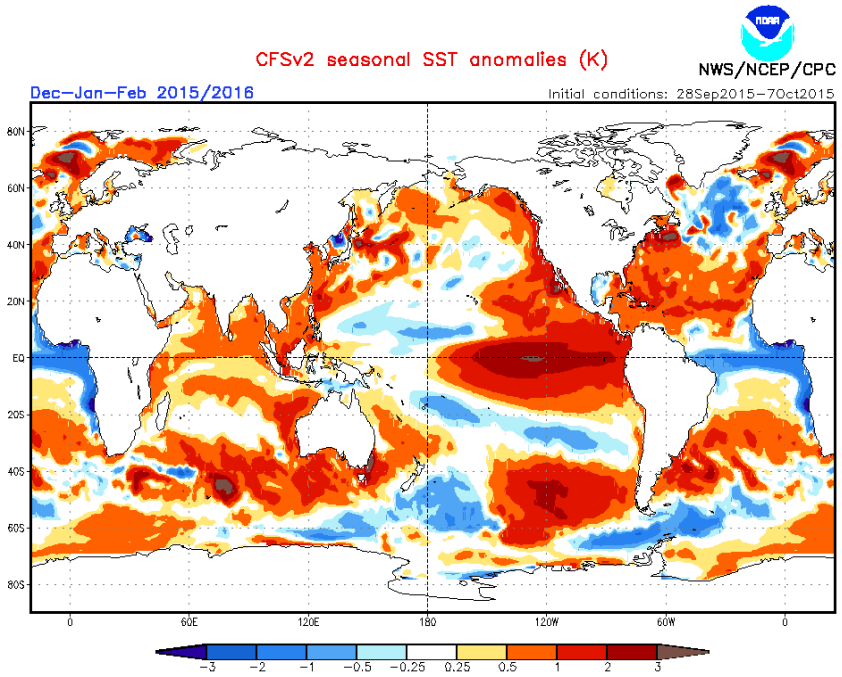


http://old.ecmwf.int/products/forecasts/d/charts/seasonal/forecast/

OCEANIC FORECASTS
SEA SURFACE TEMPERATURE (SST)

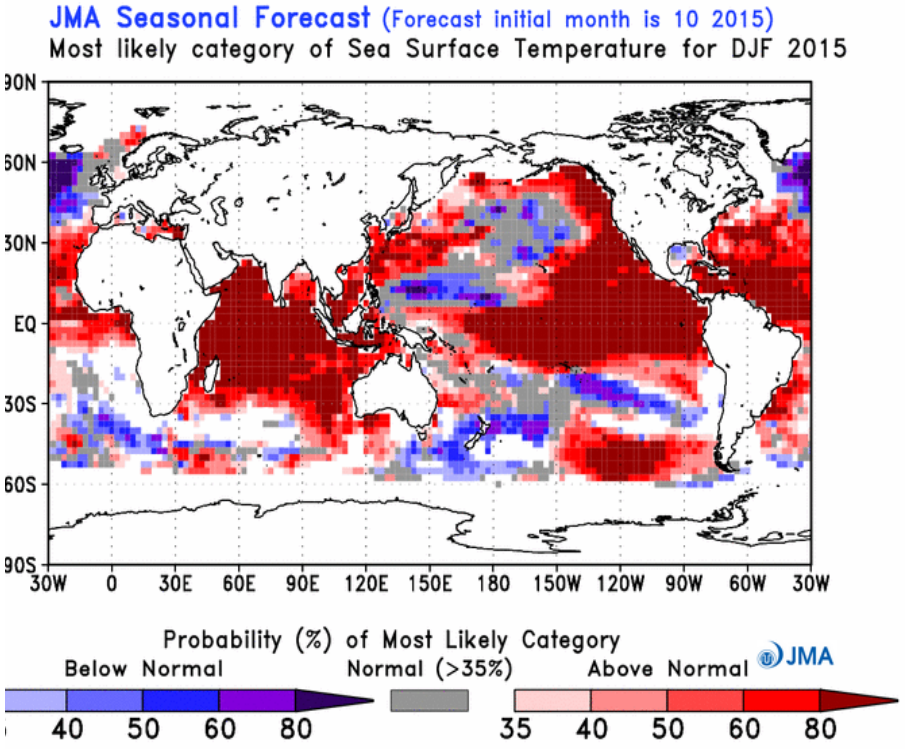
December 2015 - February 2016

CLIMATE PREDICTION CENTRE



http://www.cpc.ncep.noaa.gov/products/CFSv2/CFSv2seasonal.shtml

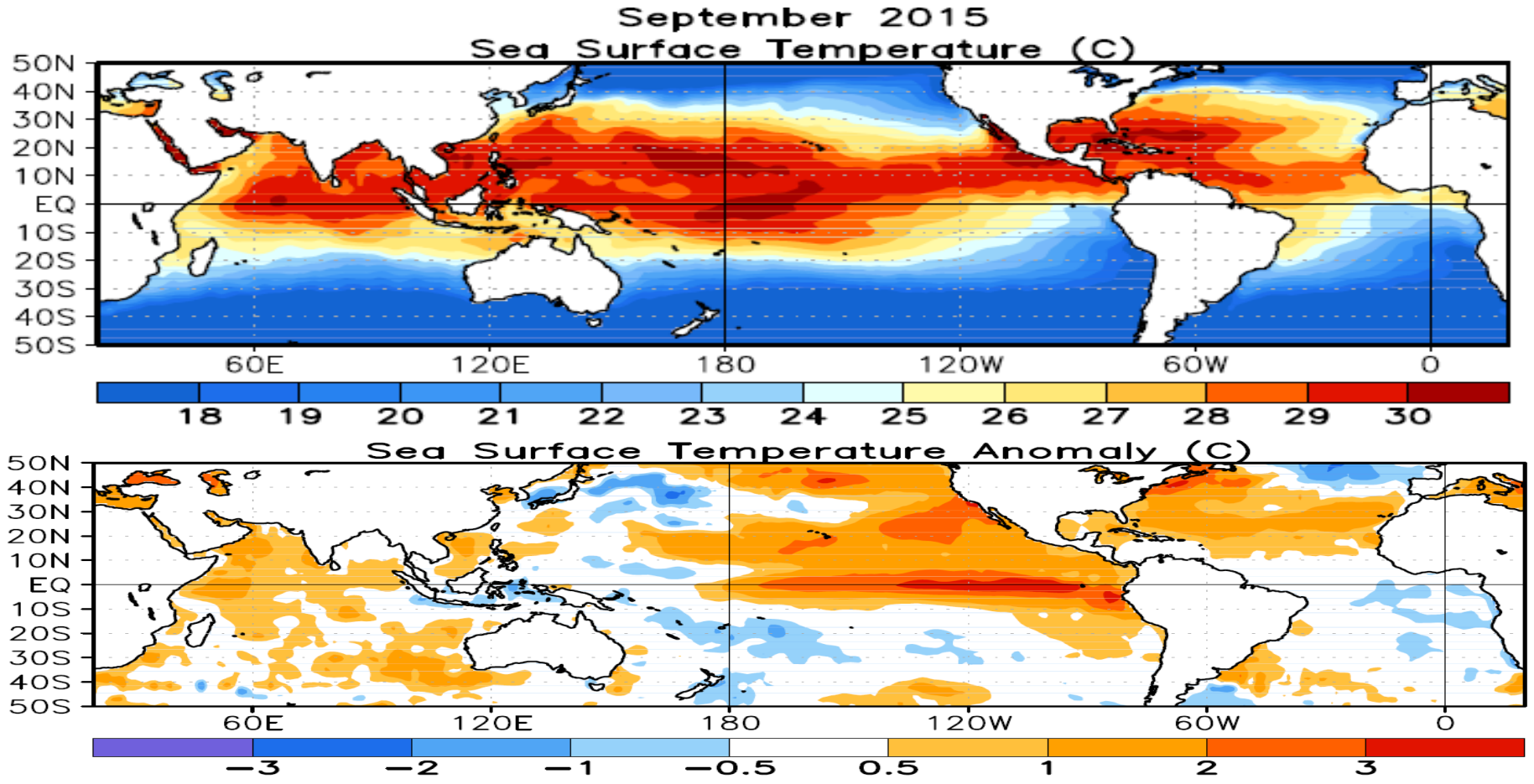
TOKYO CLIMATE CENTRE



http://ds.data.jma.go.jp/tcc/tcc/products/model/

ENSO FORECASTS

CLIMATE PREDICTION CENTRE

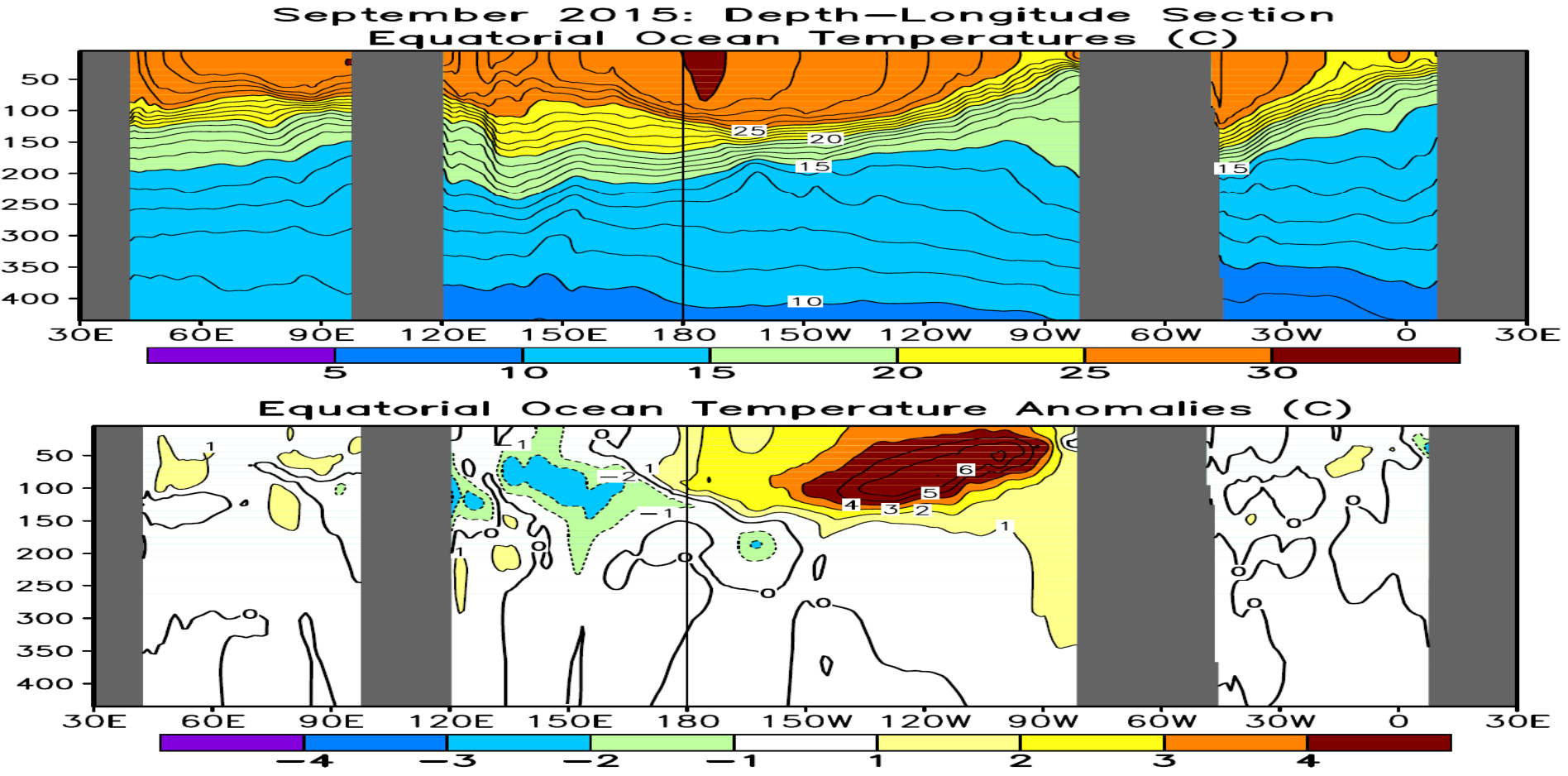


Climate Diagnostics Bulletin

http://www.cpc.ncep.noaa.gov/products/CDB/CDB_Archive_pdf/pdf_CDB_archive.shtml

ENSO

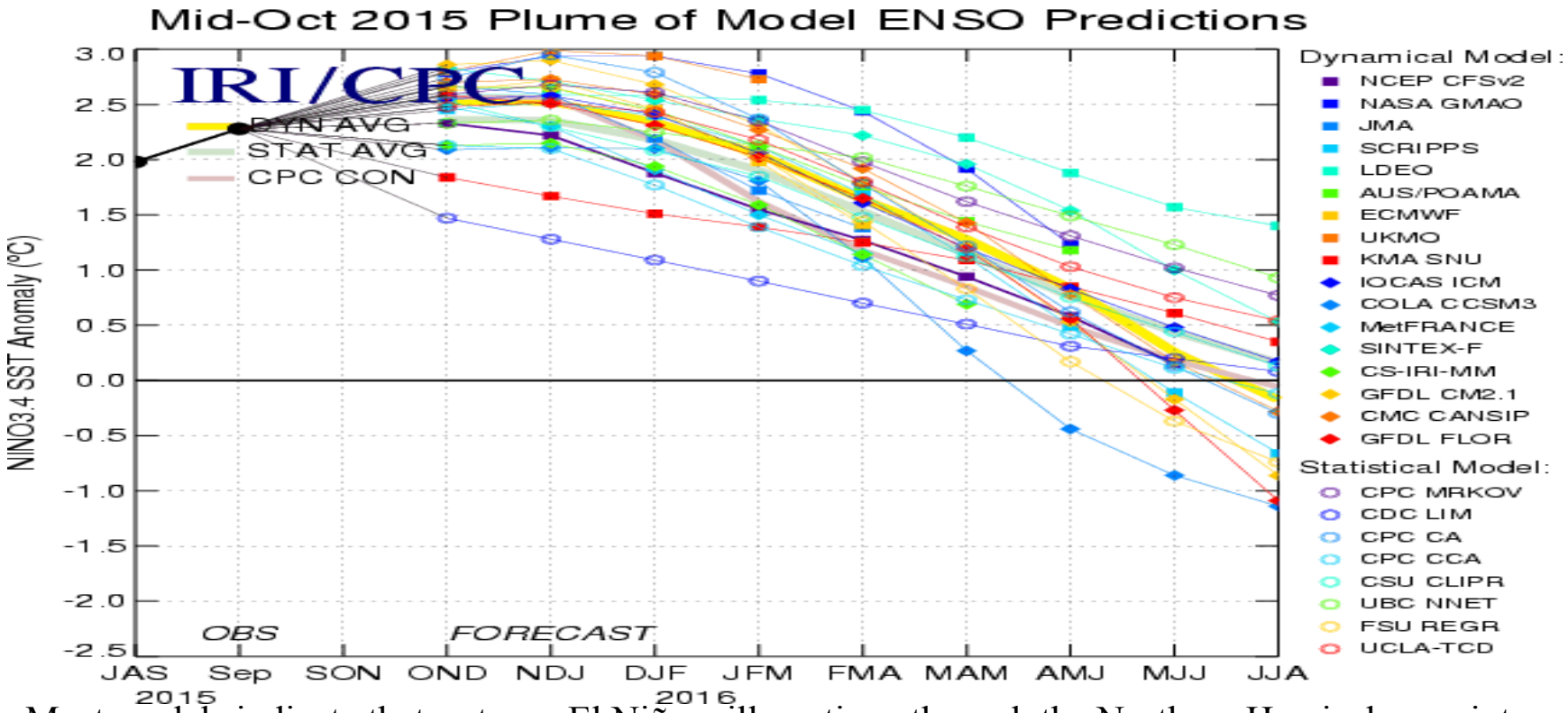
CLIMATE PREDICTION CENTRE



Climate Diagnostics Bulletin

http://www.cpc.ncep.noaa.gov/products/CDB/CDB_Archive_pdf/pdf_CDB_archive.shtml

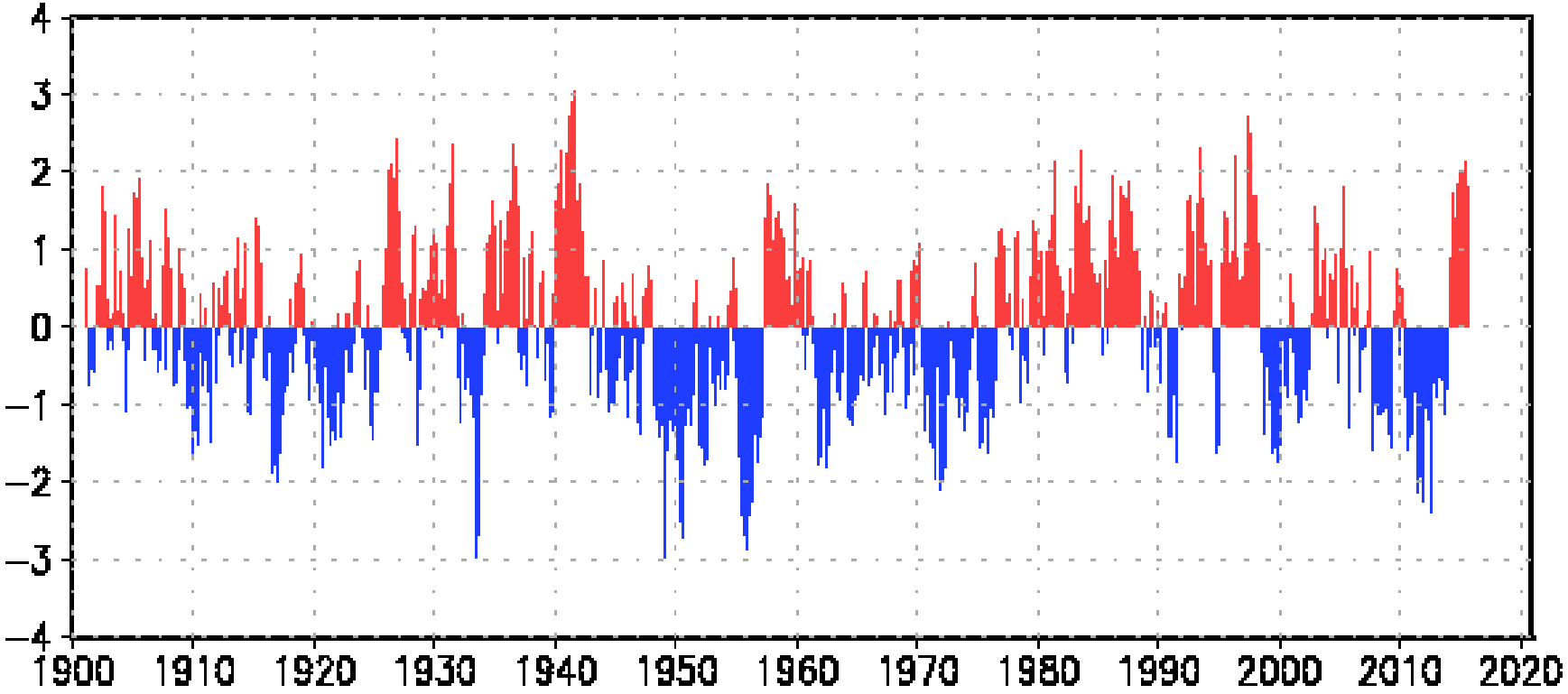
ENSO FORECASTS



Most models indicate that a strong El Niño will continue through the Northern Hemisphere winter 2015-16, followed by weakening and a transition to ENSO-neutral during the late spring or early summer. CPC/IRI Consensus ENSO Forecast Probabilities winter 2015-2016 La Niña, Neutral and El Niño are 0%, 1% и 99 %.

http://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/?enso_tab=enso-sst_table

PACIFIC DECADAL OSCILLATION



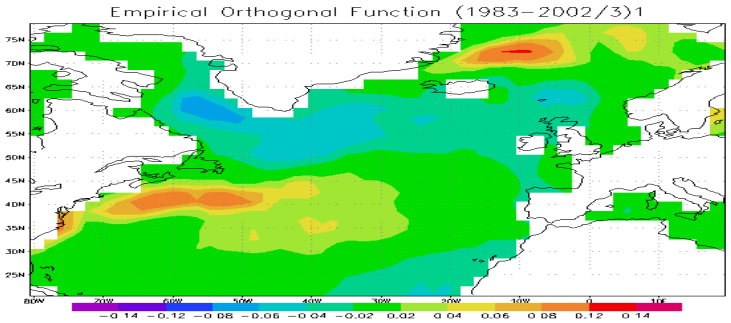
The PDO index is defined as the projections of monthly mean SST anomalies onto their first EOF vectors in the North Pacific (north of 20ºN). The EOF vectors are derived for the period from 1901 to 2000, and climatology is defined as monthly mean for the same period. Globally averaged monthly mean SST anomalies are subtracted from each monthly mean SST anomaly before calculation of the first EOF vector in order to eliminate the effects of global warming.

http://ds.data.jma.go.jp/tcc/tcc/products/elnino/decadal/pdo.html

OCEANIC FORECASTS
SEA SURFACE TEMPERATURE (SST)

OUTLOOK

In the Indian Ocean: the most significant SST anomalies (positive and negative) are found in the southern hemisphere. Several centers predict positive SST anomalies in the vicinity of the Indian subcontinent and of the Southeast Asia in the northern hemisphere. It can cause the winter monsoon strengthing.**In the Pacific Ocean:** Most models predict warmer than normal conditions in the central of the equatorial latitudes. Accoding to the IRI/CPC the probabilities for La Nina, neutral and El Nino conditions (using -0.5C and 0.5C thresholds) over the coming DJF season are: 0%, 1% и 99 %. Negative anomalies in the Westen Tropics and positive anomalies in the Eastern Tropics are in the forecasts of some models. Most models indicate possible increased temperature contrasts between the western (eastern) and the central part of the area in the northern hemisphere. Warmer than normal conditions are expected to north of 50˚N. This is typical SST anomalies in the positive phase of PDO.**North Atlantic:** The tripole is the principal mode of SST variability in the North Atlantic (see picture). According to the most models, it is characterized by negative anomalies from Labrador to Europe and the negative anomalies in the central part of the area .Tthere are significant positive SST anomalies in the Gulf Stream and the NEO. Increasing temperature contrasts can lead to an exacerbation of atmospheric fronts and increased cyclonic activity . This means that the zonal transport of air mass is more intensive than it is necessary under the climate. The forecasts of most centers indicate the signal associated with the appearance of positive SST anomalies in the Gulf Stream and NEO, too.

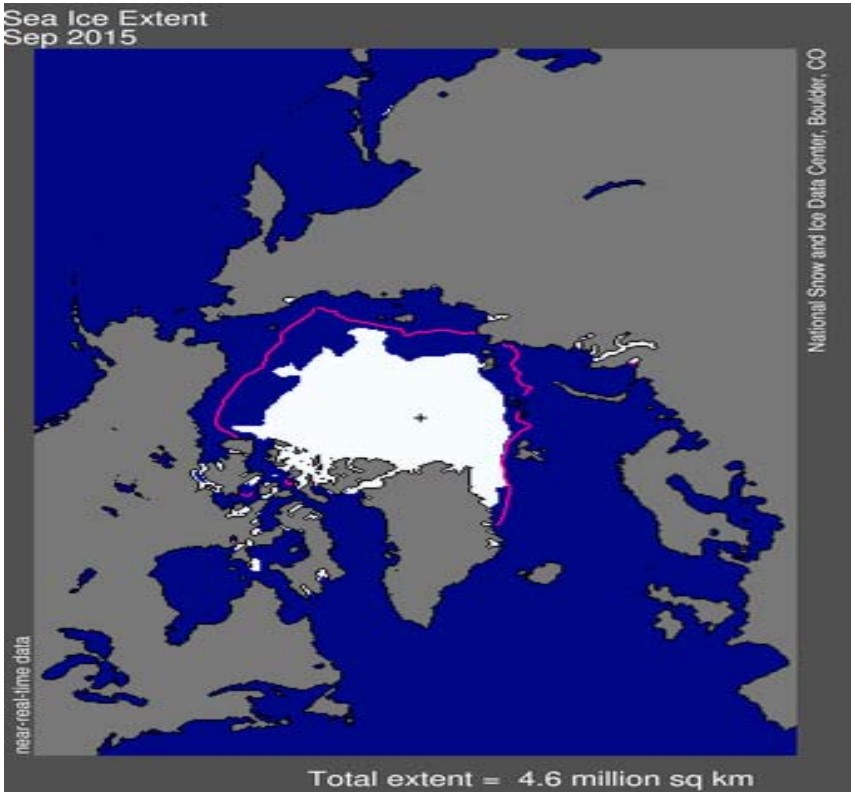


SST: First Empirical Orthogonal Function.

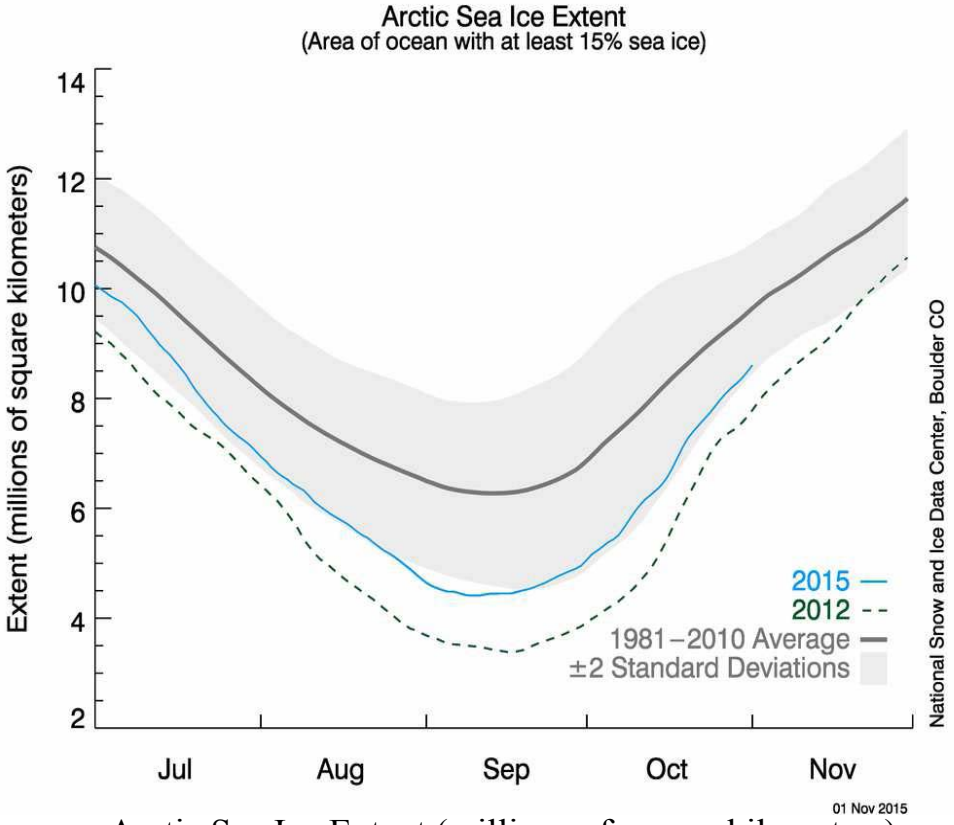
According to the forecasts of most centers the significant positive SST anomalies are expected in the Norwegian and Barents Seas at higher latitudes of the North Atlantic. These anomalies are characterized by high stability. Significant positive SST anomalies that persist for a long time may result in a further reduction in the area of ice cover in the Arctic (see below).

ARCTIC SEA ICE EXTENT

National Snow and Ice Data Centre, Boulder, CO



Sea-Ice extension in Arctic. August 2014. The pink line indicates the averaged extension (for the 1979-2000 period).



Arctic Sea Ice Extent (millions of square kilometers).

http://nsidc.org/data/seaice_index/

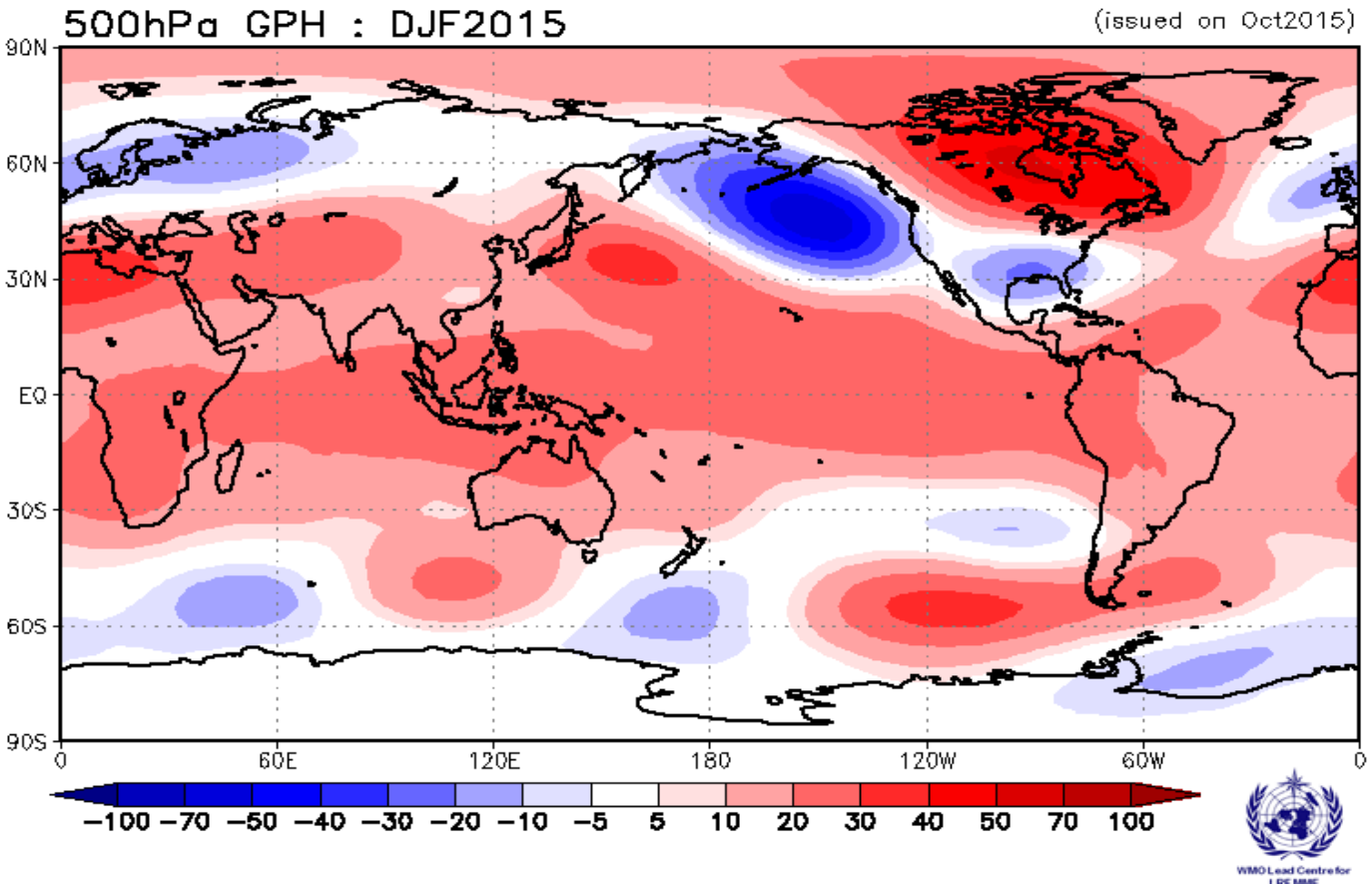
GENERAL CIRCULATION

ПРОИЗВОДИТЕЛИ:

- Seul
- Washington
- Toulouse
- Exeter
- CPTEC
- ECMWF
- Melbourne
- Montreal

LC MMELRF-WMO Lead Centre for MME LRF

December 2015 - February 2015.



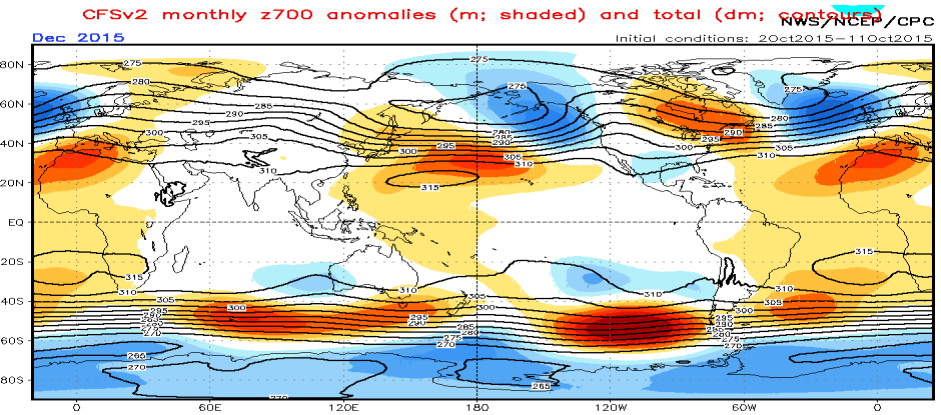
https://www.wmolc.org/

NORTH EURASIA CLIMATE CENTRE

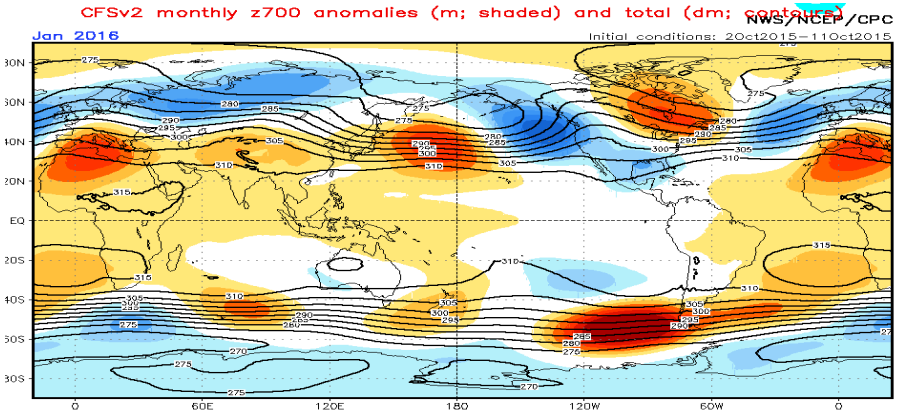
GENERAL CIRCULATION (H700)

CLIMATE PREDICTION CENTRE
NATIONAL WEATHER SERVICE of USA

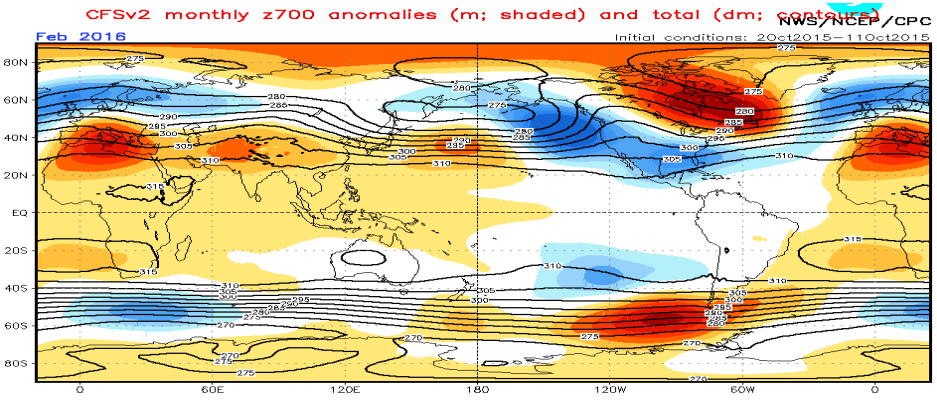
December 2015



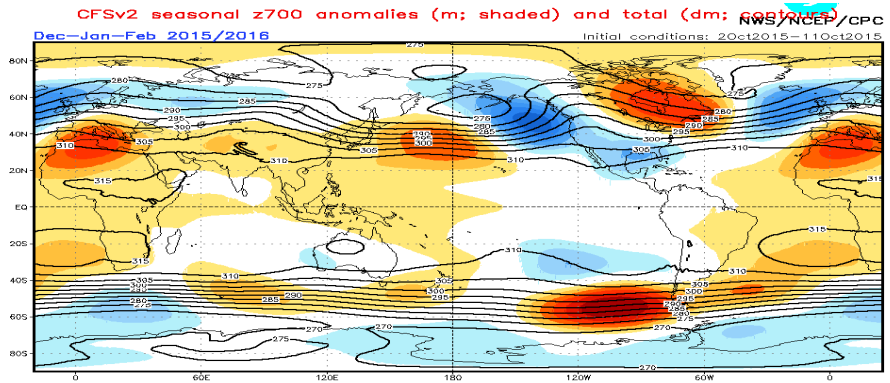
January 2016



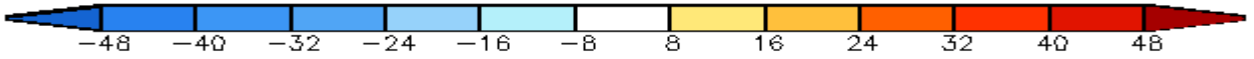
February 2016



December 2015- Februry 2016



issued on November 2015



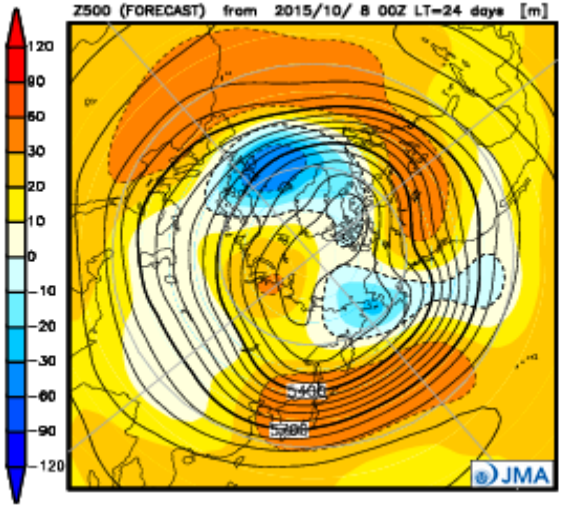
http://www.cpc.ncep.noaa.gov/products/CFSv2/CFSv2seasonal.shtml

NORTH EURASIA CLIMATE CENTRE

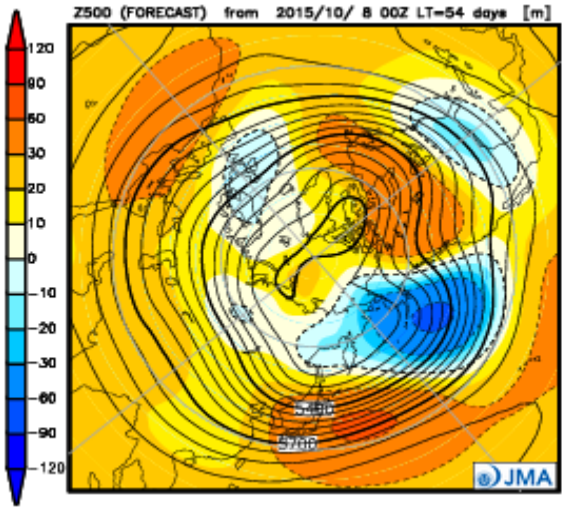
GENERAL CIRCULATION: H500 ANOMALIES

TOKYO CLIMATE CENTRE (ensemble forecast)

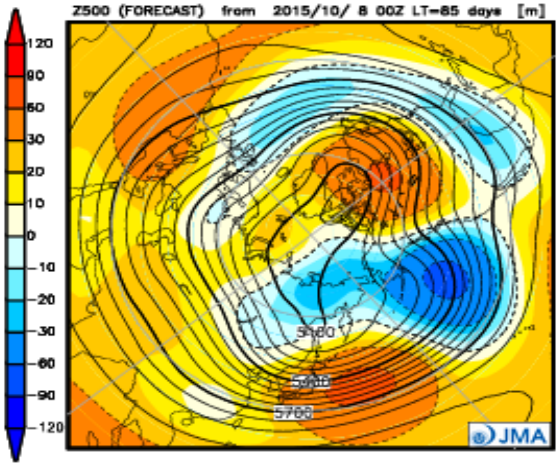
November 2015



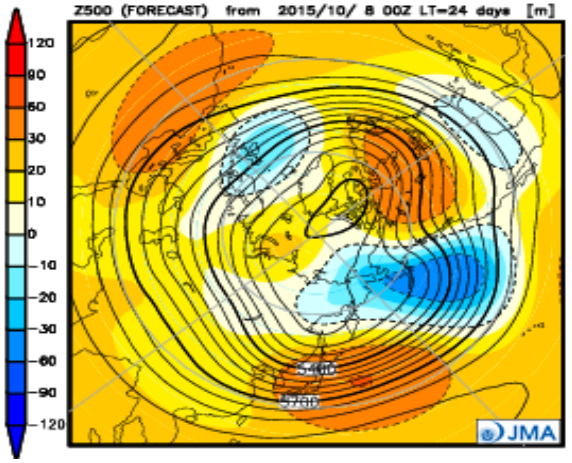
December 2015



January 2015



November 2015-January 2016



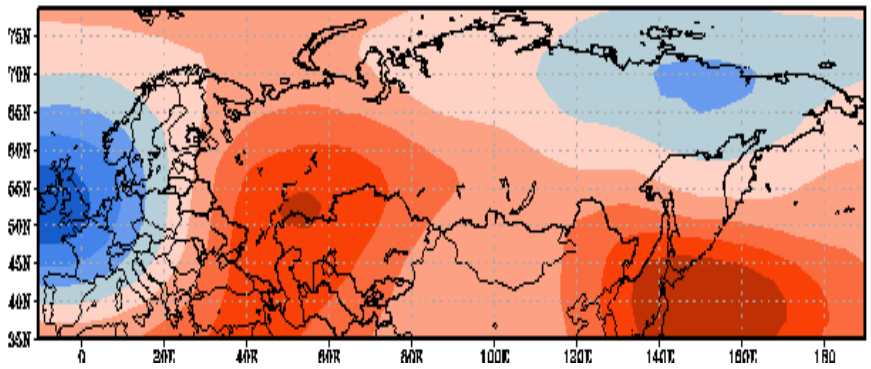
issued on November

http://ds.data.jma.go.jp/tcc/tcc/products/model/map/4mE/map1/pztmap.php

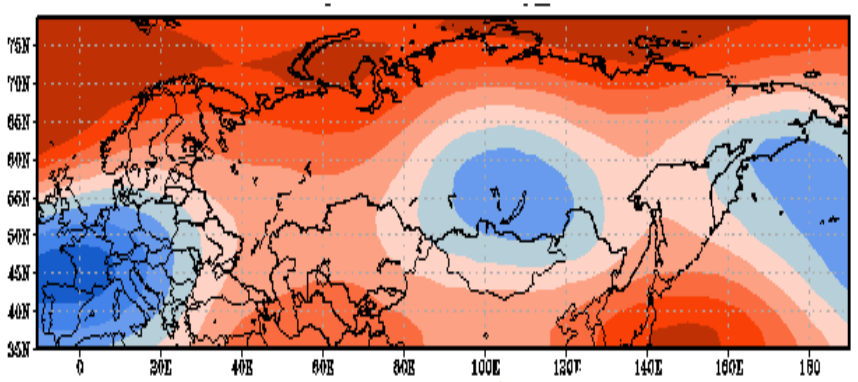
THE GENERAL CIRCULATION. 500 hPa height anomalies

HIDROMETEOROLOGICAL CENTRE OF RUSSIA(SL-AV) and MGO MODEL (ensemble average, dm)

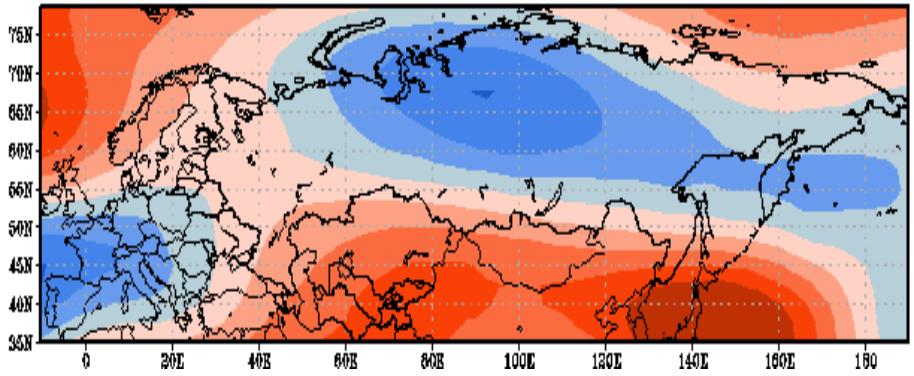
December 2015



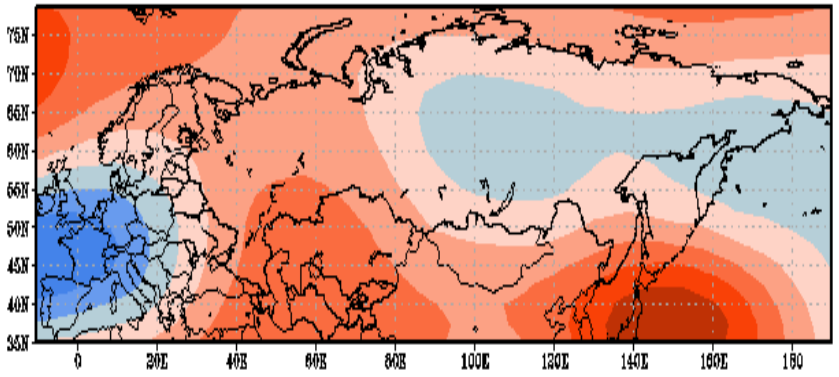
January 2016

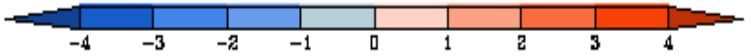


February 2016



December 2015- February 2016





issued on October 2015

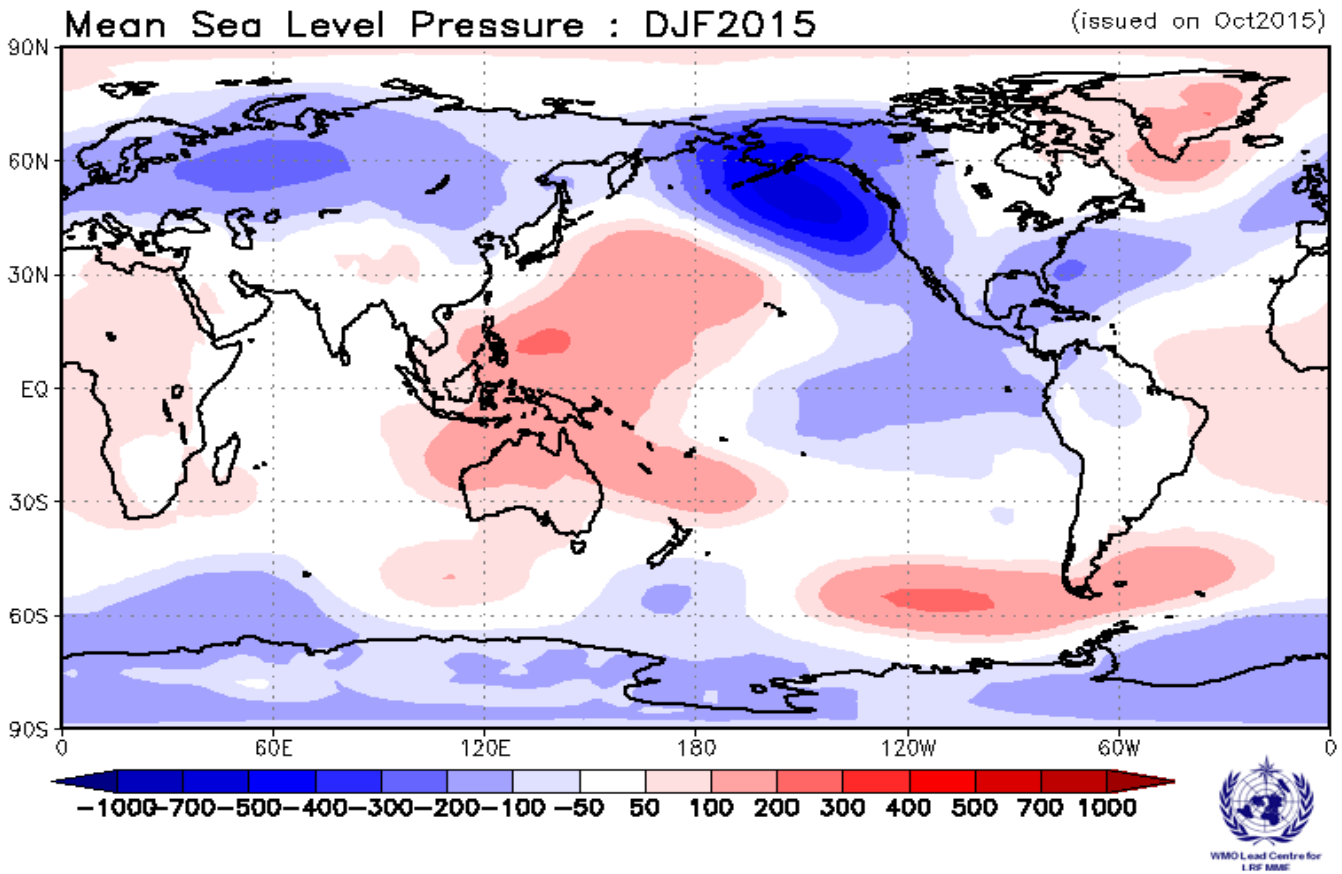
THE GENERAL CIRCULATION

LC MMELRF-WMO Lead Centre for MME LRF

December 2015 – February 2016

ПРОИЗВОДИТЕЛИ:

- Seul
- Washington
- Toulouse
- Exeter
- CPTEC
- ECMWF
- Melbourne
- Montreal



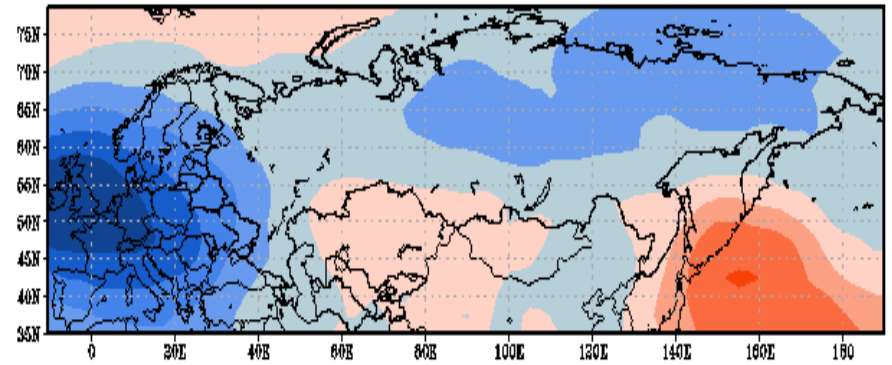
https://www.wmolc.org/

NORTH EURASIA CLIMATE CENTRE

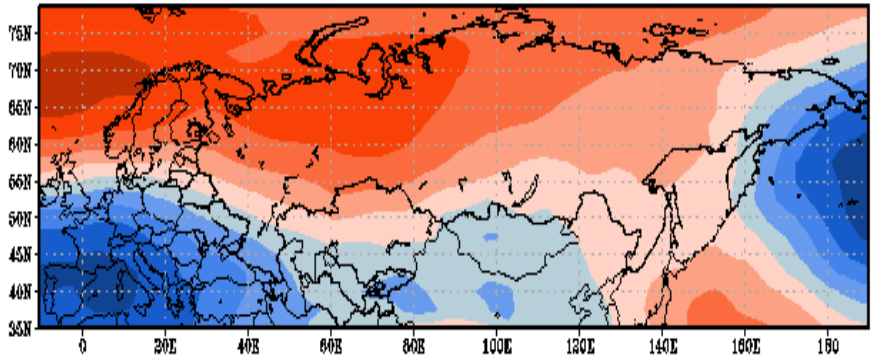
THE MEAN SEA LEVEL PRESSURE (gPa)

HIDROMETEOROLOGICAL CENTRE OF RUSSIA: SL-AV(HMC) and MGO MODEL (Ensemble Average)

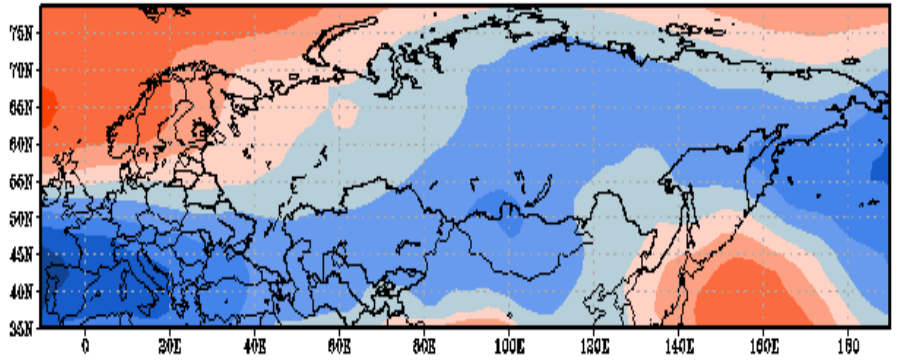
December 2015



January 2016

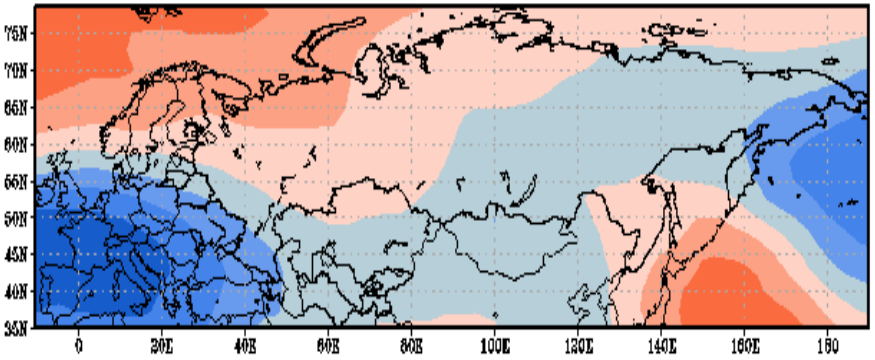


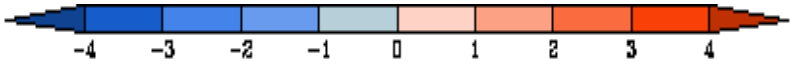
February 2016



issued on October 2015

December 2015- February 2016





http://neacc.meteoinfo.ru

INDICES OCSILLATION FORECASTS

HIDROMETEOROLOGICAL CENTRE OF RUSSIA (SL-AV)

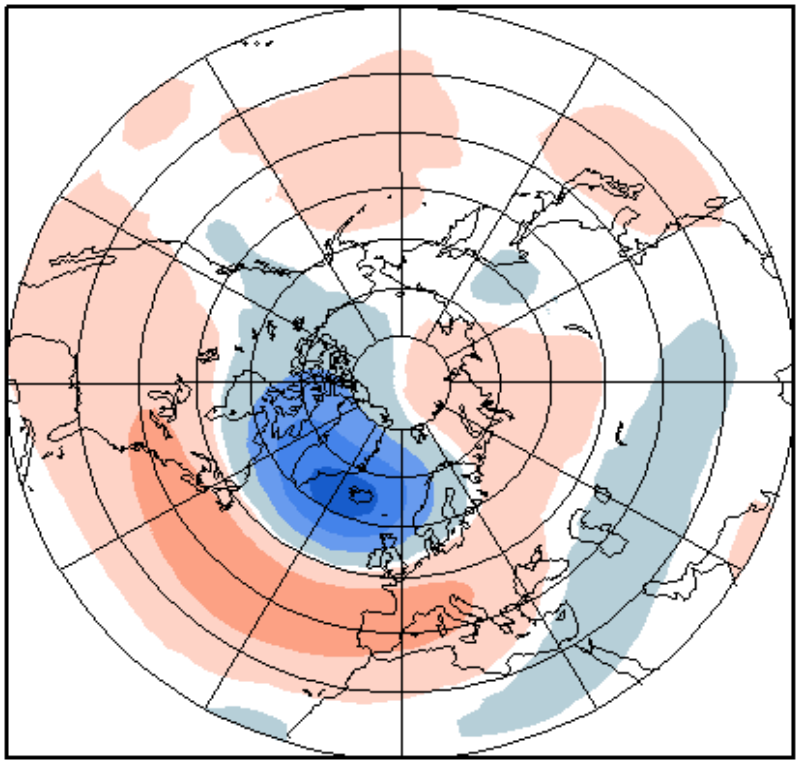
INDEX	DECEMBER 2015 – FEBRUARY 2016			
	DECEMBER	JANUARY	FEBRUARY	DECEMBER-FEBRUARY
EA	-1,05	-0,58	0,09	-0,89
WA	1,12	0,09	0,57	0,88
EU	0,98	1,40	1,76	1,32
WP	0,25	- 0,76	-0,91	-0,27
PNA	0,62	0,36	0,16	0,61
POL	-1.04	-0.12	-0.83	-0.81
NAO	0,16	0,15	0,31	-0,04
AO	0,09	-0,91	-0,60	-0,35

East Atlantic (**EA**), West Atlantic (**WA**), Eurasian (**EU**), west Pacific (**WP**), Pacific-North American (**PNA**) oscillations (Wallace J. M., Gutzler D.S. Teleconnections in the geopotential height field during the Northern Hemisphere winter. – Mon. Wea. Rev., 1981, vol. 109, pp. 784-812).

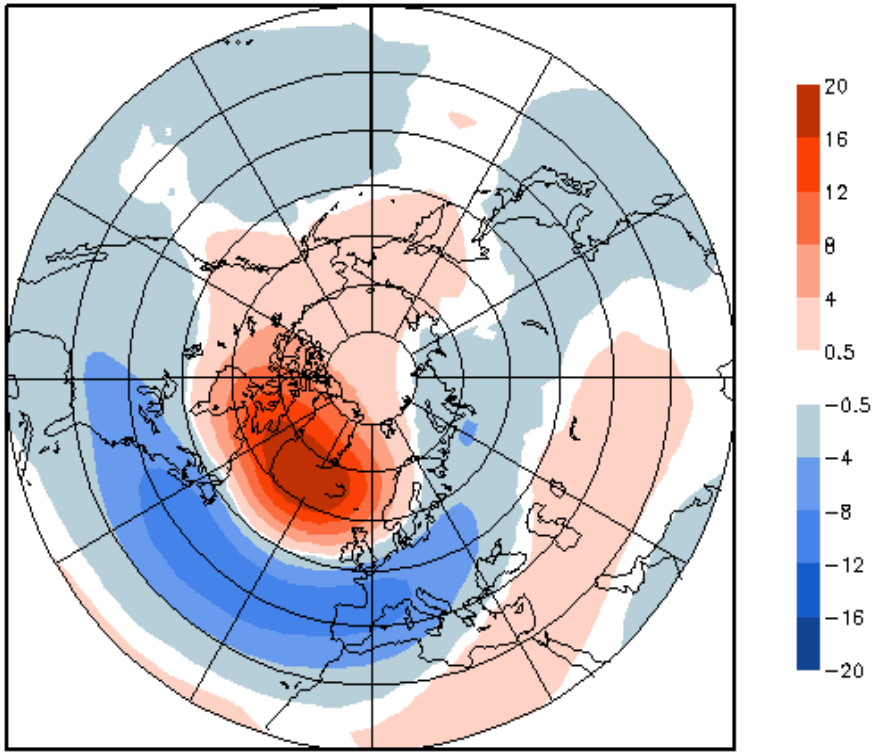
North Atlantic (**NAO**), Polar (POL), Arctic (**AO**) oscillations (Climate Prediction Centre of USA).

NORTH ATLANTIC OSCILLATION
COMPOSITE MAPS
ANOMALY OF H-500 (dm)

Positive phase
(NAO>0.63)

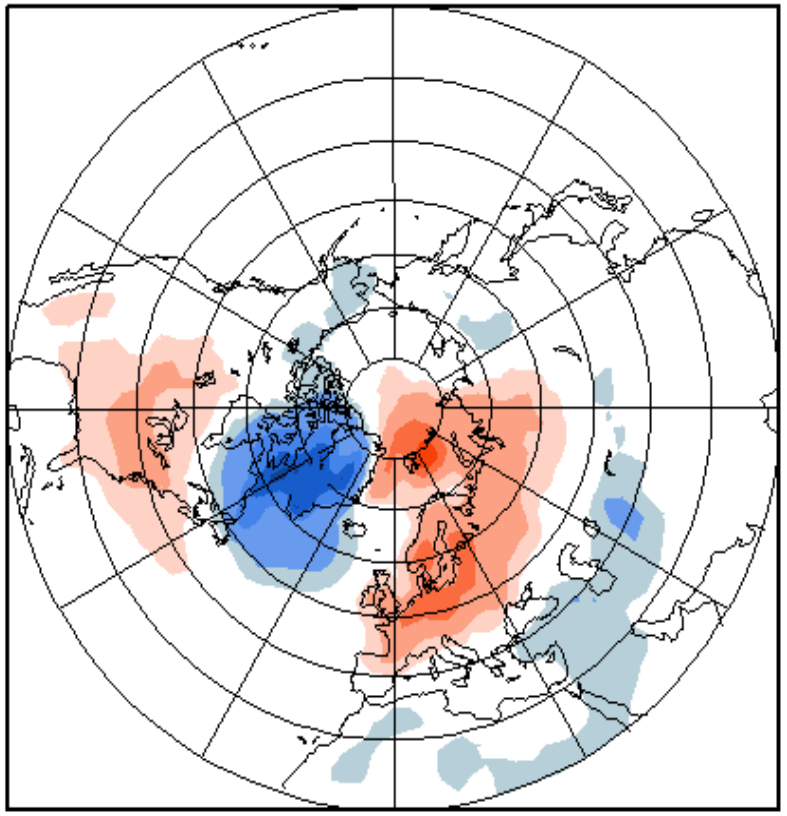


Negative phase
(NAO< -0.49)

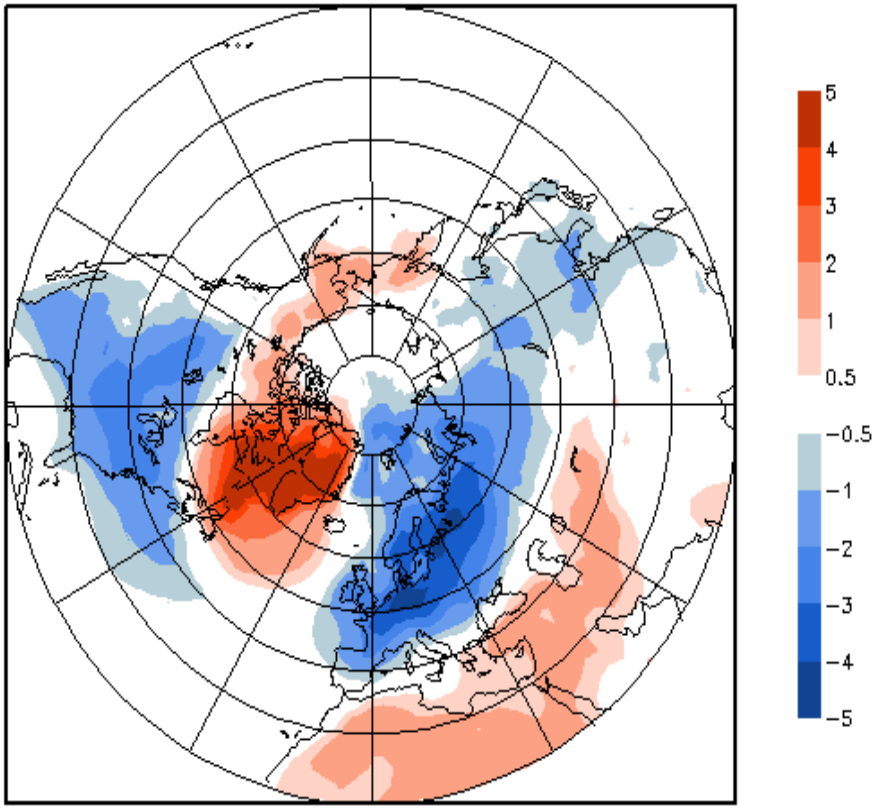


NORTH ATLANTIC OSCILLATION
COMPOSITE MAPS
ANOMALY OF AIR TEMPERATURE (°C)

Positive phase
(NAO>0.63)

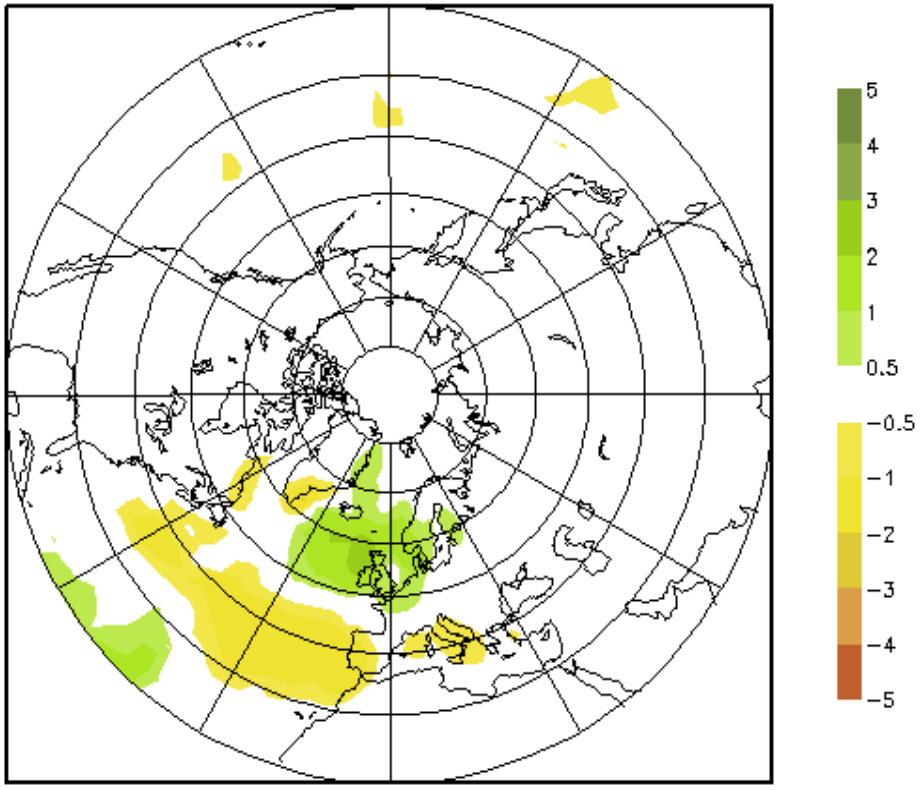


Negative phase
(NAO< -0.49)

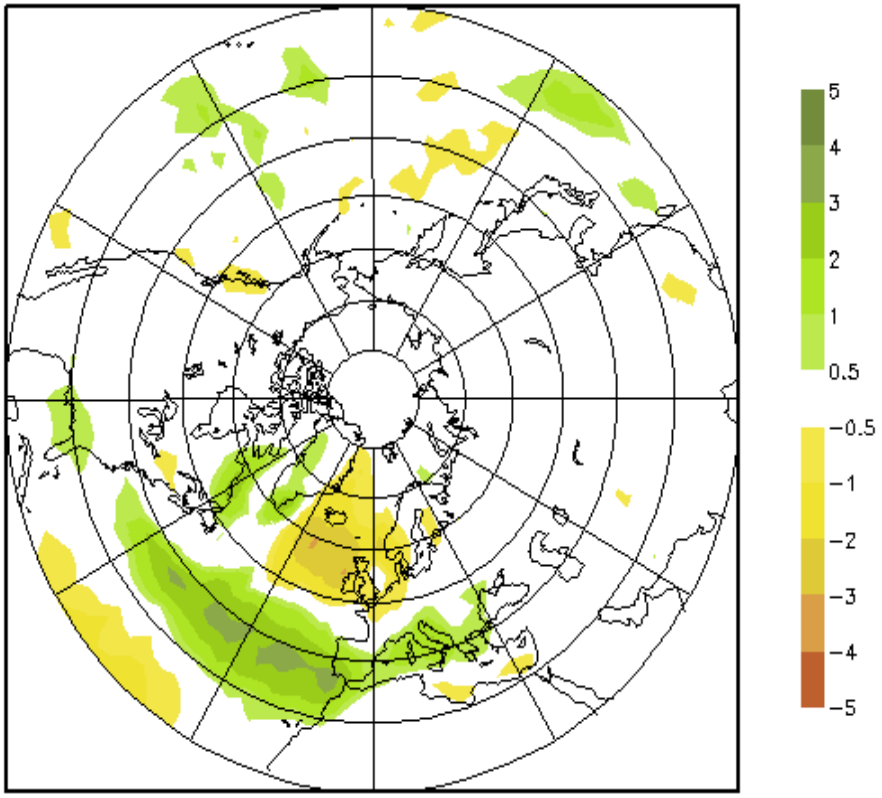


NORTH ATLANTIC OSCILLATION
COMPOSITE MAPS
ANOMALY OF PRECIPITATION (mm/day)

Positive phase
(NAO>0.63)

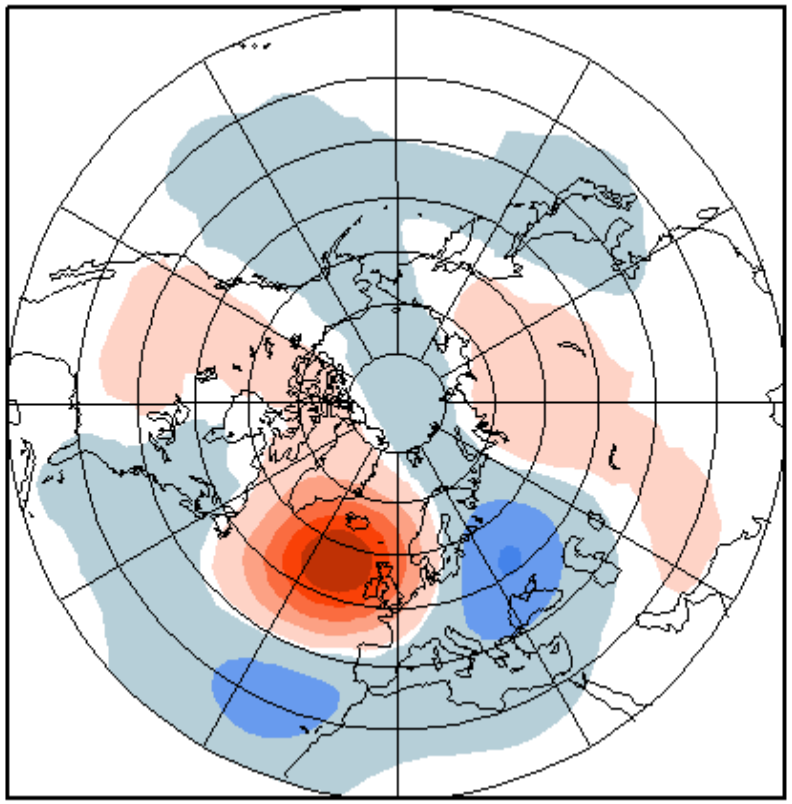


Negative phase
(NAO< -0.49)

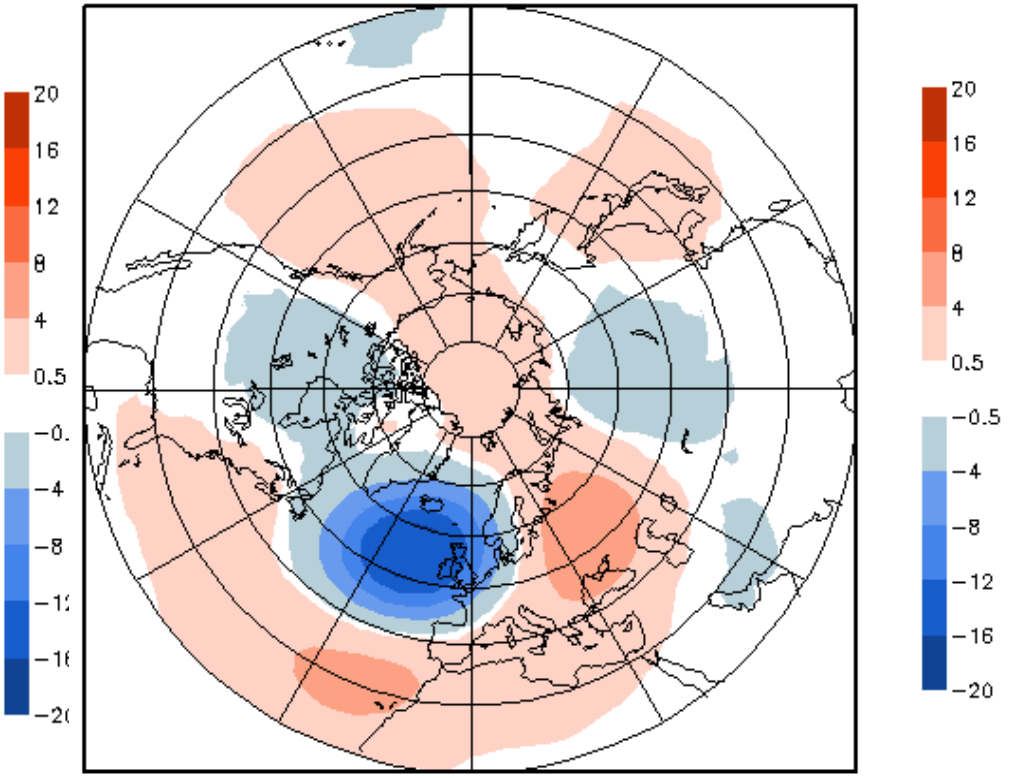


EAST ATLANTIC OSCILLATION
COMPOSITE MAPS
ANOMALY OF H-500 (dm)

Positive phase
(EA>0.49)

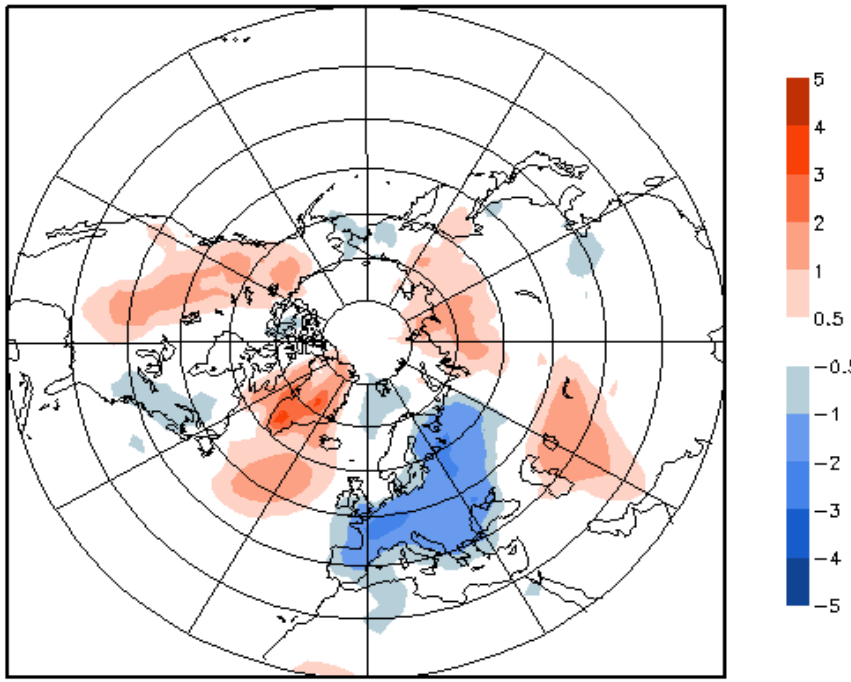


Negative phase
(EA < -0.48)

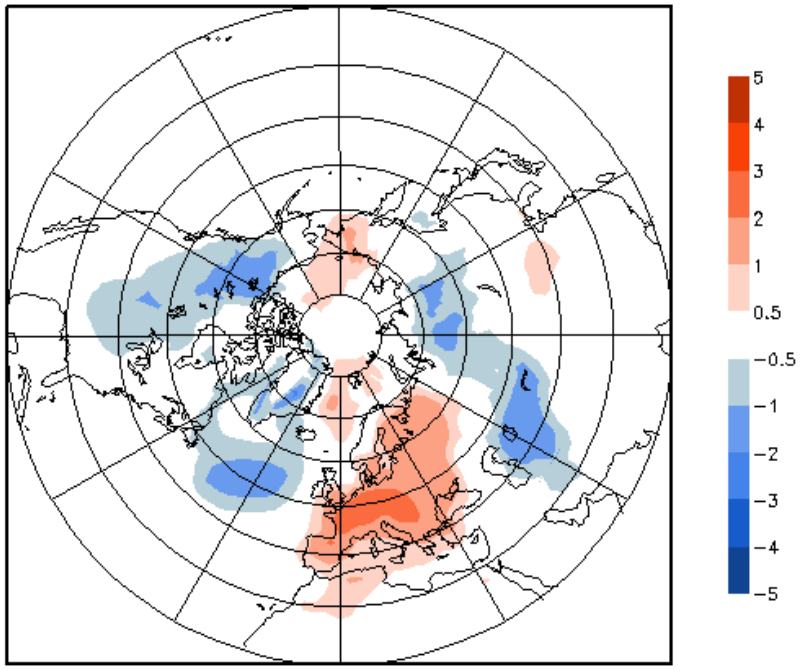


EAST ATLANTIC OSCILLATION
COMPOSITE MAPS
ANOMALY OF AIR TEMPERATURE (°C)

Positive phase
(EA>0.49)

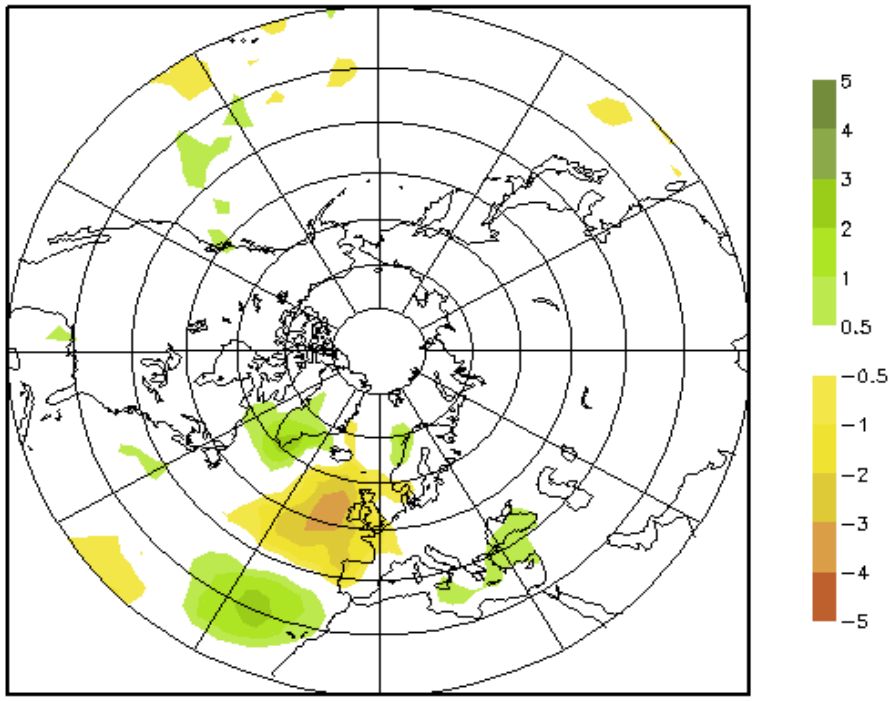


Negative phase
(EA< -0.48)

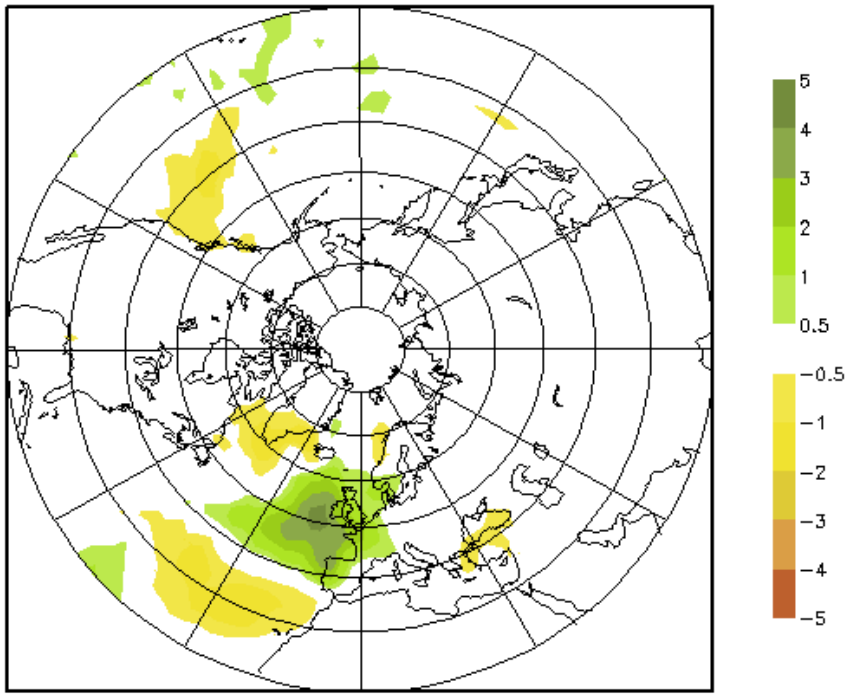


EAST ATLANTIC OSCILLATION
COMPOSITE MAPS
ANOMALY OF PRECIPITATION (mm/day)

Positive phase
(EA>0.49)

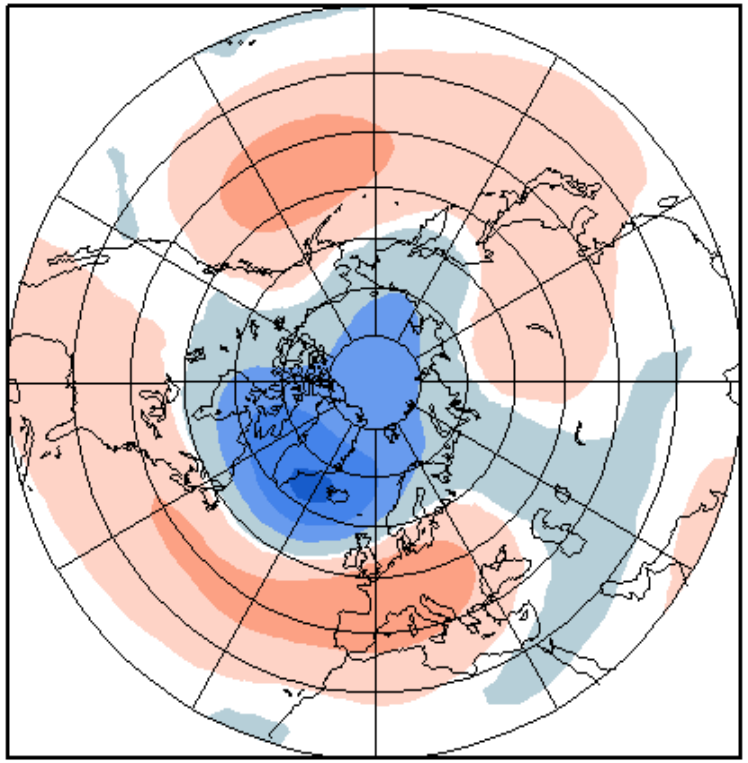


Negative phase
(EA< -0.48)

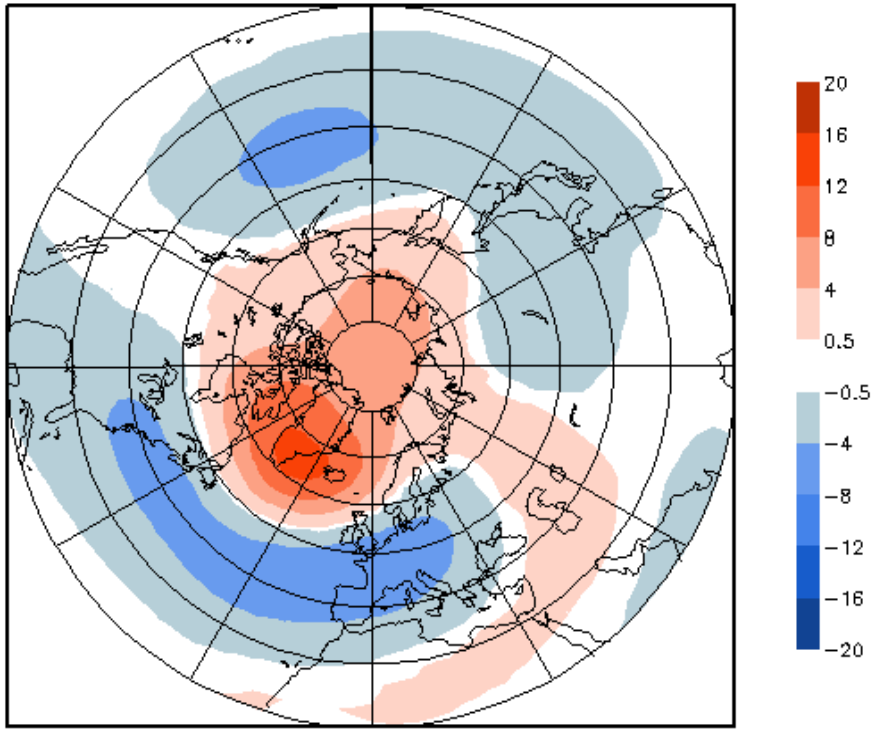


ARCTIC OSCILLATION
COMPOSITE MAPS
ANOMALY OF H-500 (dm)

Positive phase
(AO>0.87)

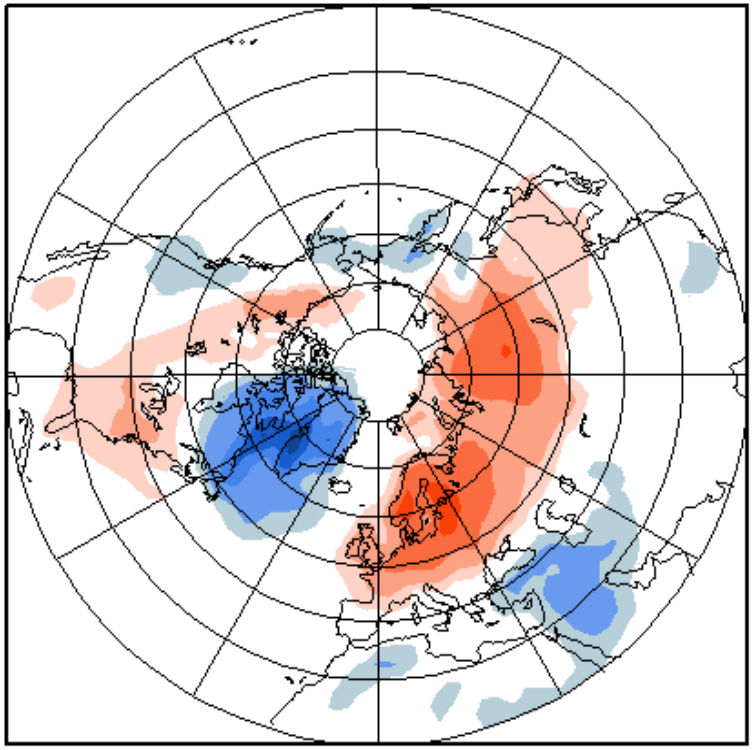


Negative phase
(AO< -0.88)

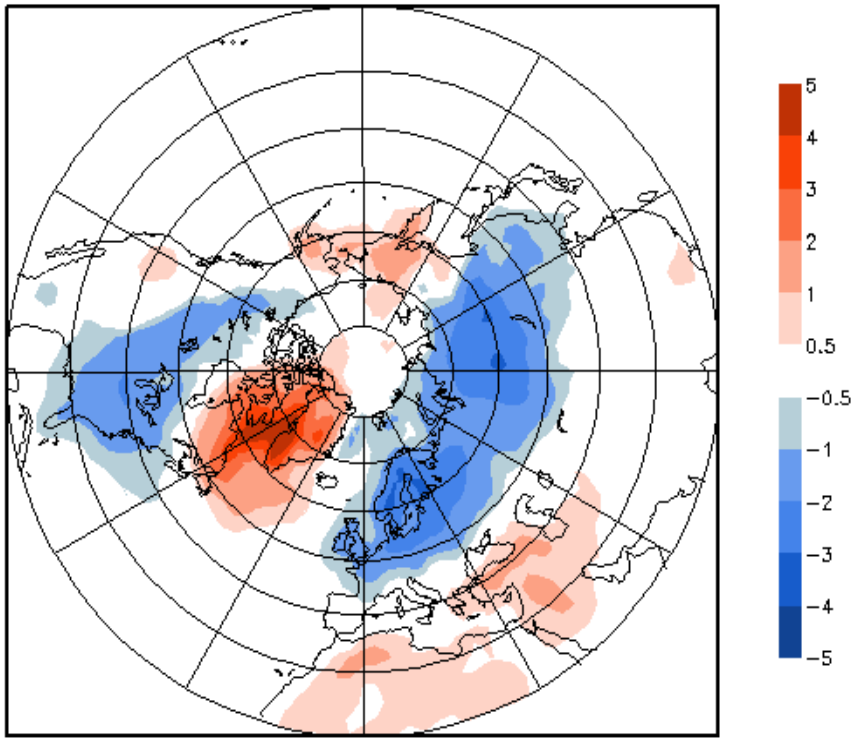


ARCTIC OSCILLATION
COMPOSITE MAPS
ANOMALY OF AIR TEMPERATURE (°C)

Positive phase
(AO>0.87)

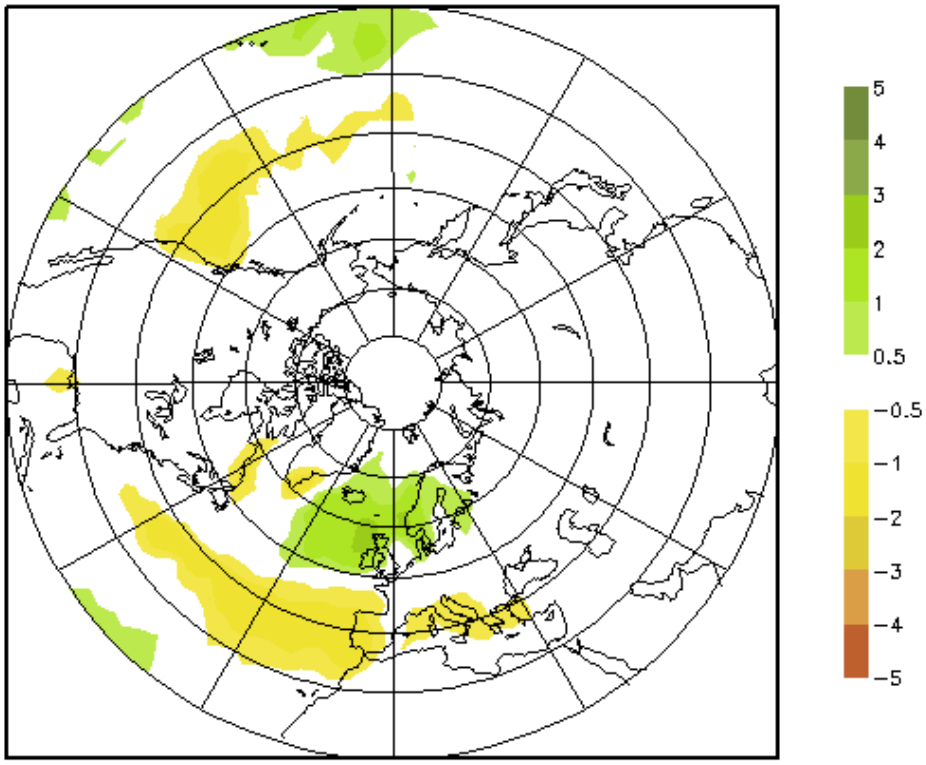


Negative phase
(AO< -0.88)

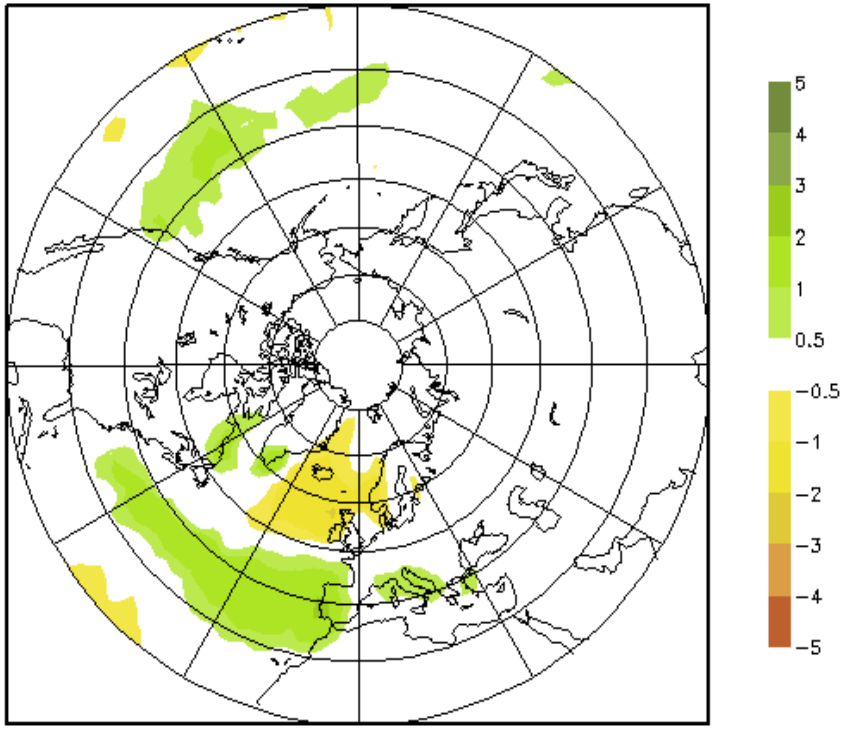


ARCTIC OSCILLATION
COMPOSITE MAPS
ANOMALY OF PRECIPITATION (mm/day)

Positive phase (AO>0.87)

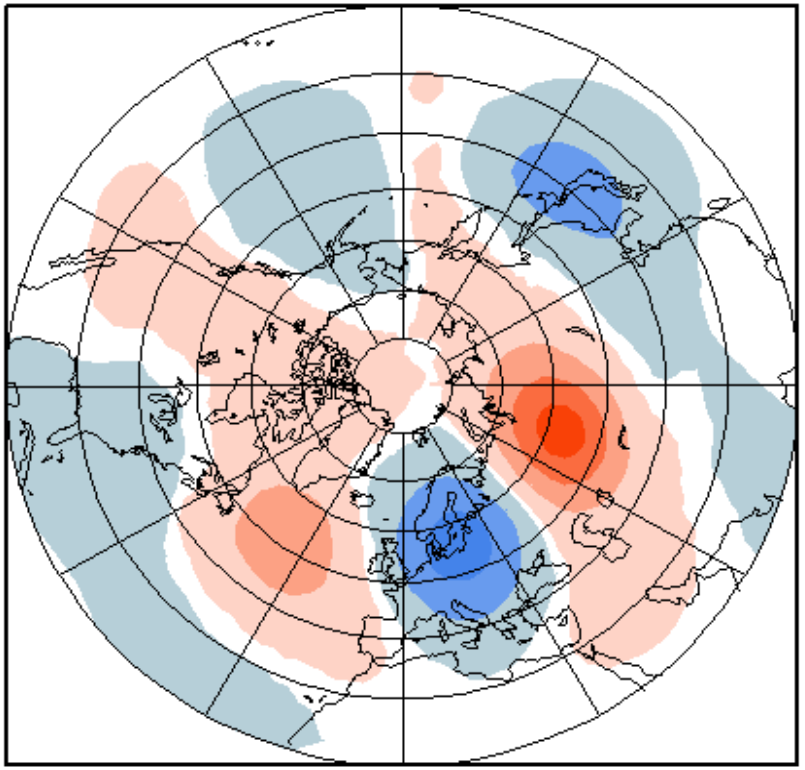


Negative phase (AO< -0.88)

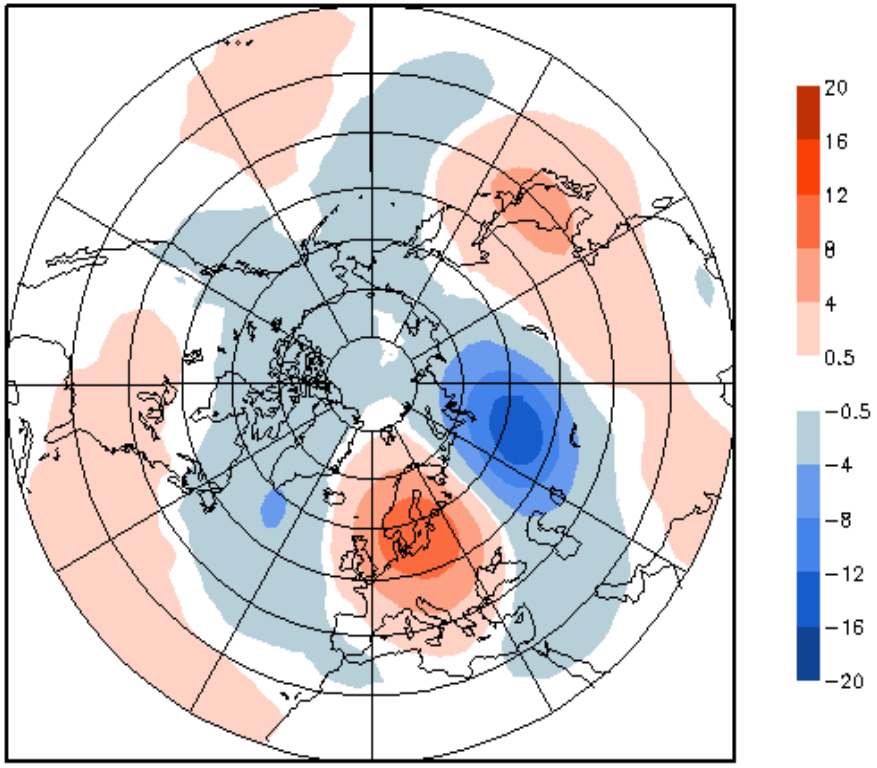


AURASIAN OSCILLATION
COMPOSITE MAPS
ANOMALY OF H-500 (dm)

Positive phase
(EU>0.46)

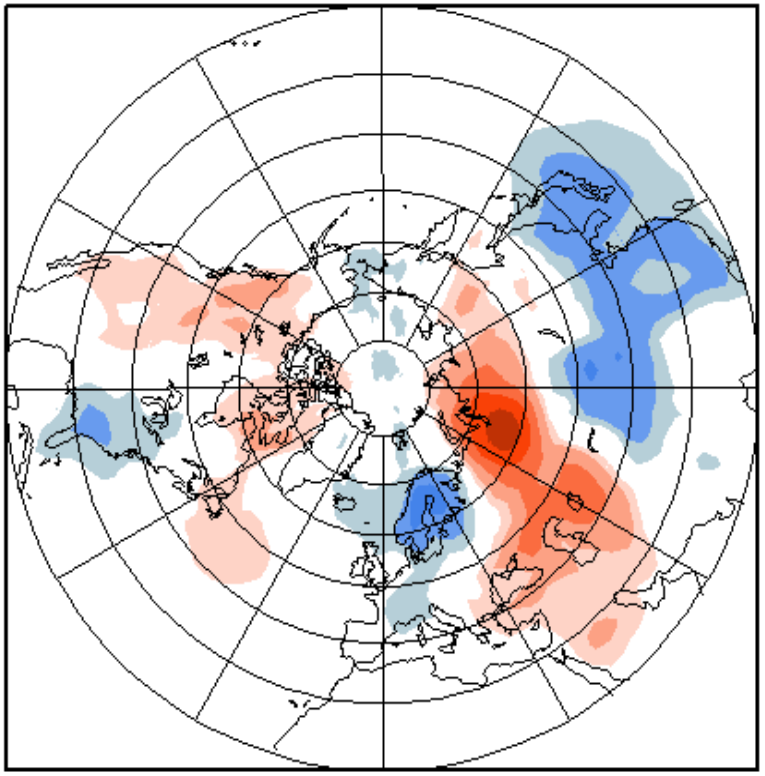


Negative phase
(EU < -0.45)

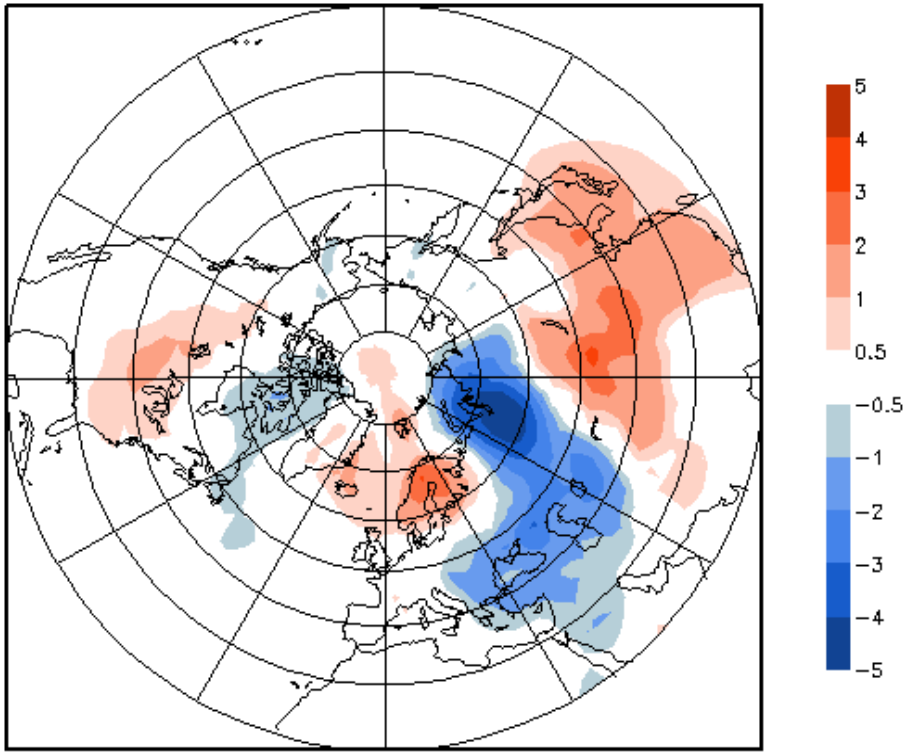


AURASIAN OSCILLATION
COMPOSITE MAPS
ANOMALY OF AIR TEMPERATURE (°C)

Positive phase
(EU>0.46)

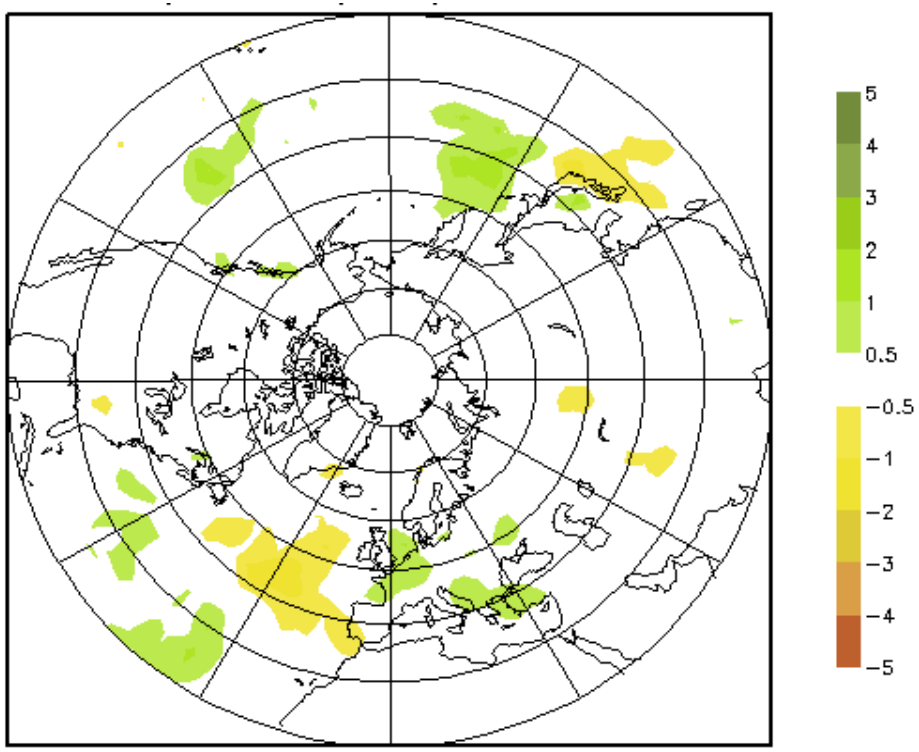


Negative phase
(EU< -0.45)

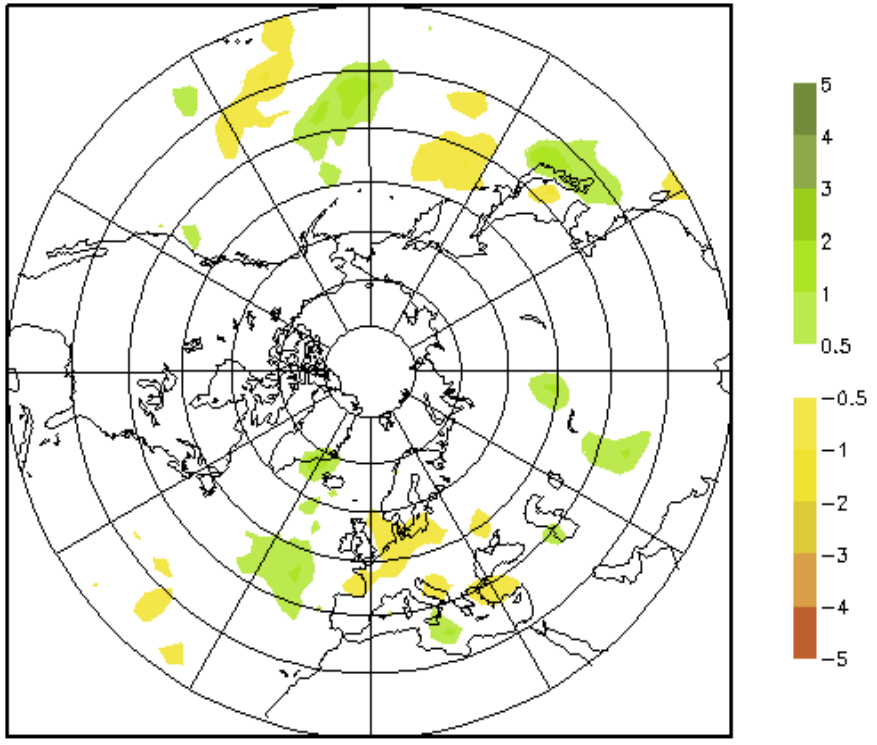


AURASIAN OSCILLATION
COMPOSITE MAPS
ANOMALY OF PRECIPITATION (mm/day)

Positive phase
(EU>0.46)



Negative phase
(EU< -0.45)



GENERAL CIRCULATION

OUTLOOK

The atmospheric circulation regimes are the important factors, decided the formation of the fields of temperature and precipitation on seasonal time intervals. The concept of atmospheric regimes (also called weather, planetary and climate regimes) has emerged in dynamical meteorology over recent decades. Atmospheric regimes represent preferred states of atmospheric circulation, for which atmospheric blocking, «teleconnection pattern» (refers to a recurring and persistent, large-scale pattern of pressure and circulation anomalies that spans vast geographical areas) are the good examples. To identify the leading teleconnection patterns in the atmospheric circulation, point correlation, Emperical Orthogonal Function (EOF), the Rotated Principal Component Analysis (RPCA) and etc. , were applied. Despite the variety of approaches, we have similar equivalent barotropic structures in all cases. We use teleconnection indices **EA**, **WA**, **EU**, **WP** and **PNA** by Wallace J. M., Gutzler D.S. (1981, Mon. Wea. Rev., 1981, 109, 784-812) and **NAO, POL** and **AO** (CPC). The **AO** is the most important pattern in the winter. The **NAO**, **EA** and **EU** are three basic structures that define the modes of atmospheric circulation in the Northern Eurasia during all seasons. The negative phase of **EA** is predicted by HMC in December and January. The nearly neutral phase of **NAO** is predicted by HMC in winter 2015-2016. HMC predict negative phase of AO index in January. Thus, AO index changes indicate a possible reorganization of the atmospheric circulation during the winter season in the Far East. According to the composite maps, the negative anomalies of sea level pressure are expected over most of the north regions.. The atmospheric circulation is re-formed in January. According to the forecasts of most centers and composite maps of **EA** the positive anomalies of sea level pressure are expected over most of the southern regions in the Europe.

FORECASTS OF AIR TEMPERATURE

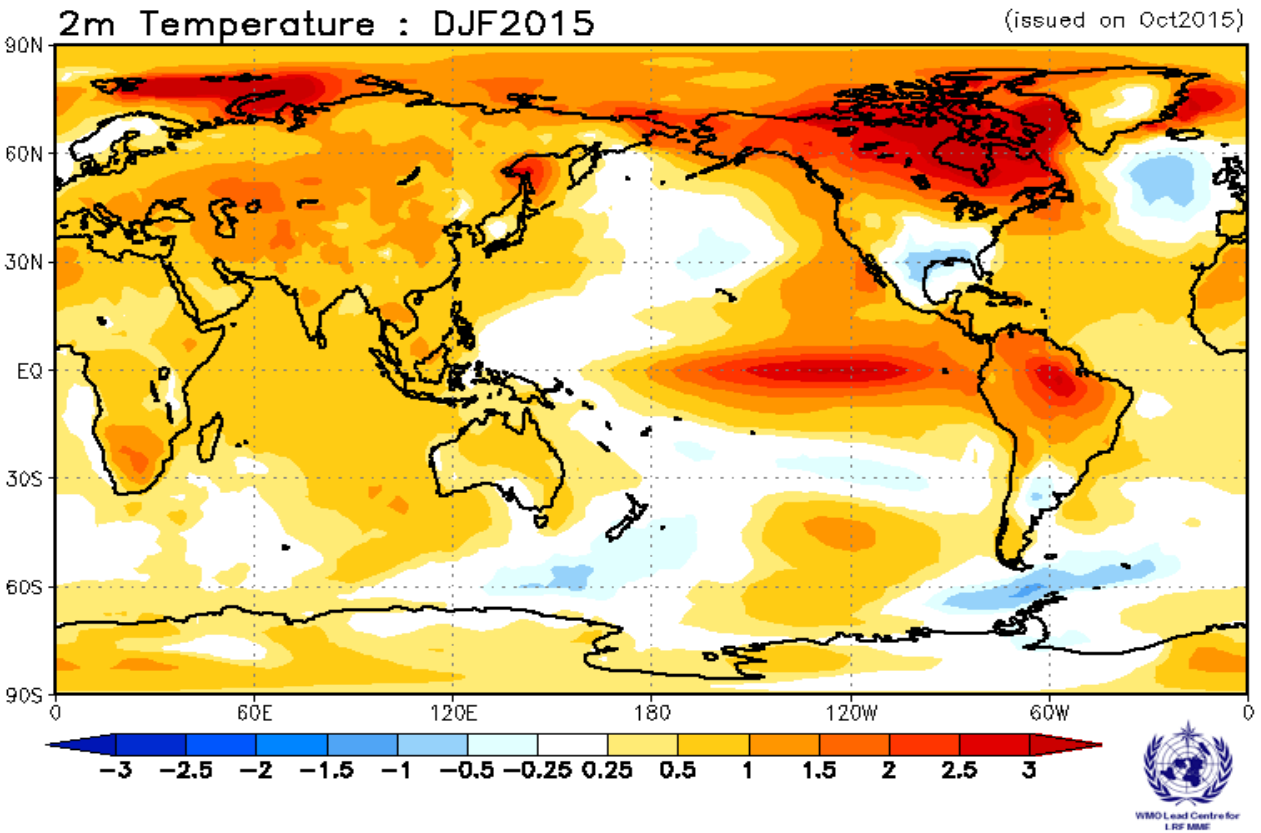
LC MMELRF-WMO Lead Centre for MME LRF

Composite map

December 2015 – February 2016

MODELS:

- Seul
- Washington
- Toulouse
- Exeter
- CPTEC
- ECMWF
- Melbourne
- Montreal



http://www.wmolc.org/

NORTH EURASIA CLIMATE CENTRE

FORECASTS OF AIR TEMPERATURE

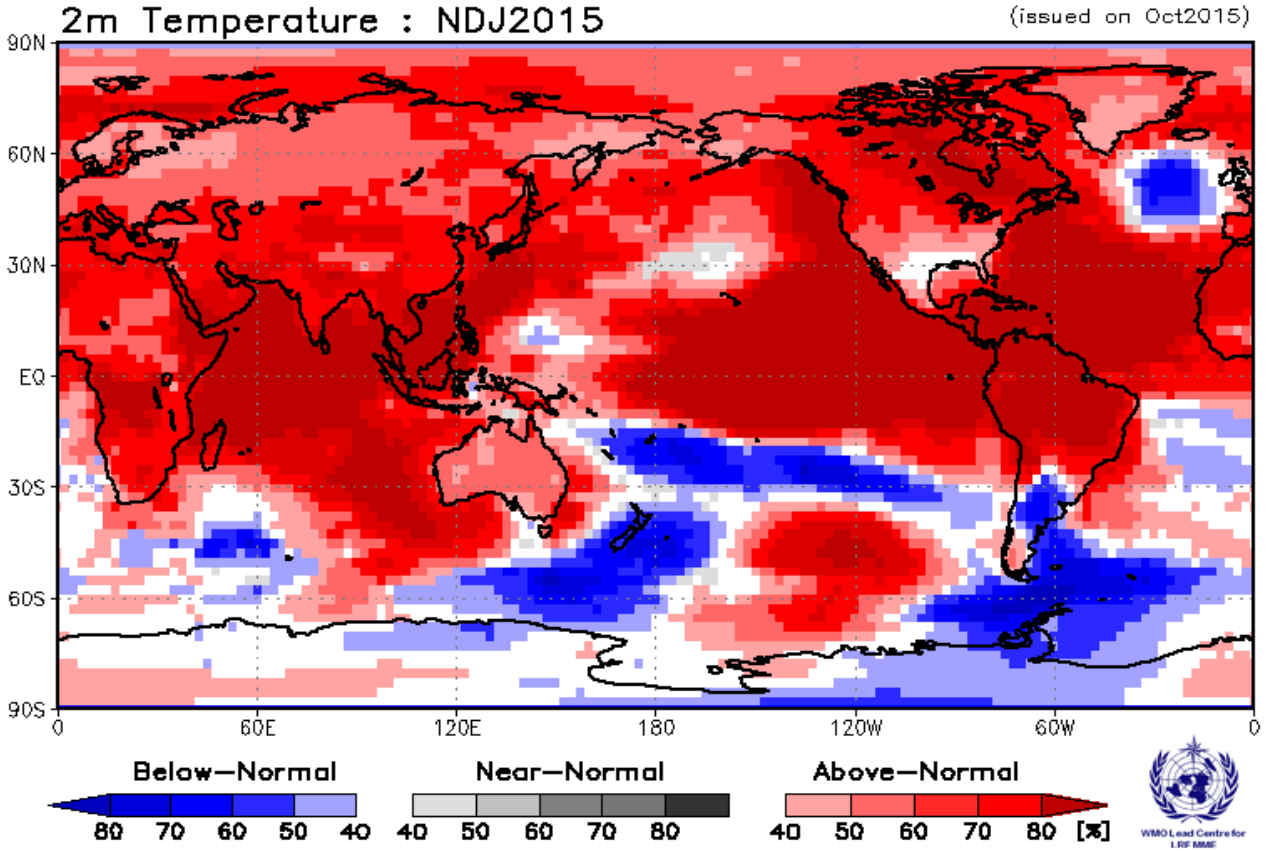
LC MMELRF-WMO Lead Centre for MME LRF

THE PROBABILISTIC FORECASTS

November 2015 – January 2016

MODELS:

- GPC_Seoul
- Beijing
- CPTEC
- EXETER
- Melbourne
- Montreal_cancm3
- Montreal_cancm4
- Moscow
- Pretoria
- Tokyo
- Washington



http://www.wmolc.org/

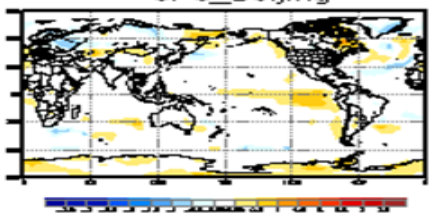
issued on October 2015

FORECASTS OF AIR TEMPERATURE

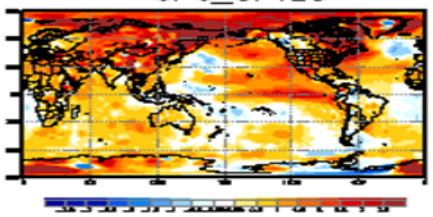
LC MMELRF-WMO Lead Centre for MME LRF

Ensemble average. November 2015 – January 2016

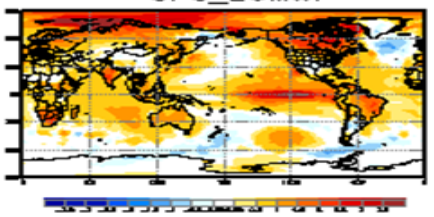
GPC_Beijing



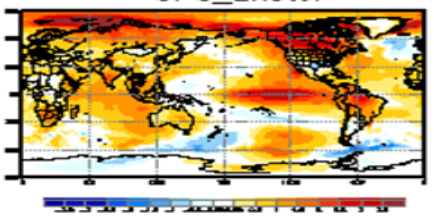
GPC_CPTEC



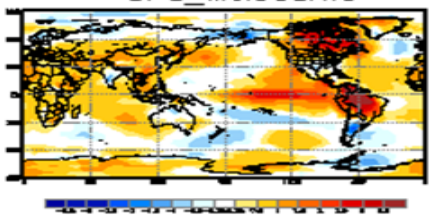
GPC_ECMWF



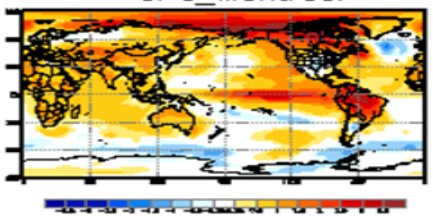
GPC_Exeter



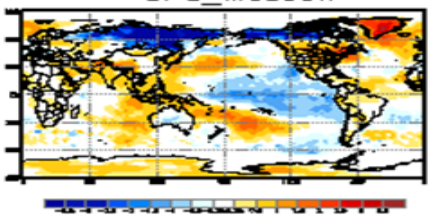
GPC_Melbourne



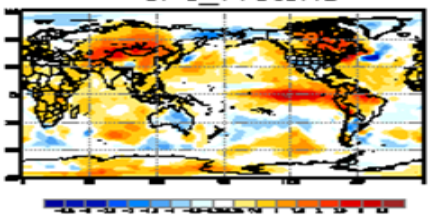
GPC_Montreal



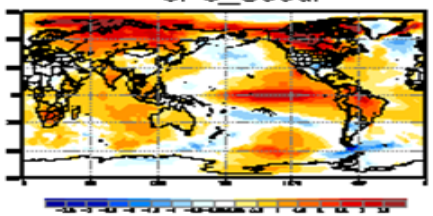
GPC_Moscow



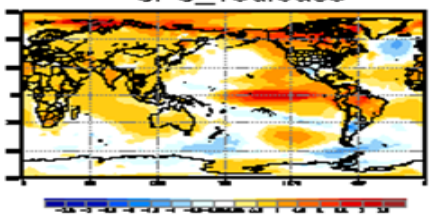
GPC_Pretoria



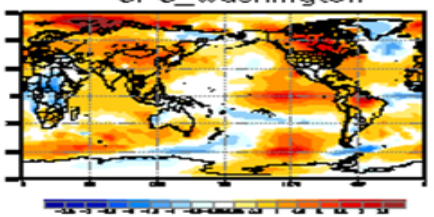
GPC_Seoul



GPC_Toulouse



GPC_Washington



The forecast was issued in October 2015

https://www.wmolc.org/

NORTH EURASIA CLIMATE CENTRE

FORECASTS OF AIR TEMPERATURE

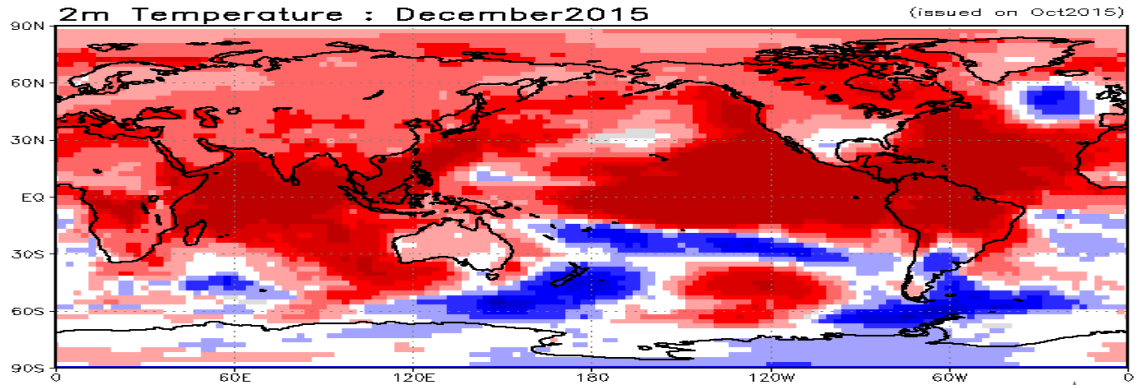
LC MMELRF-WMO Lead Centre for MME LRF

THE PROBABILISTIC FORECASTS

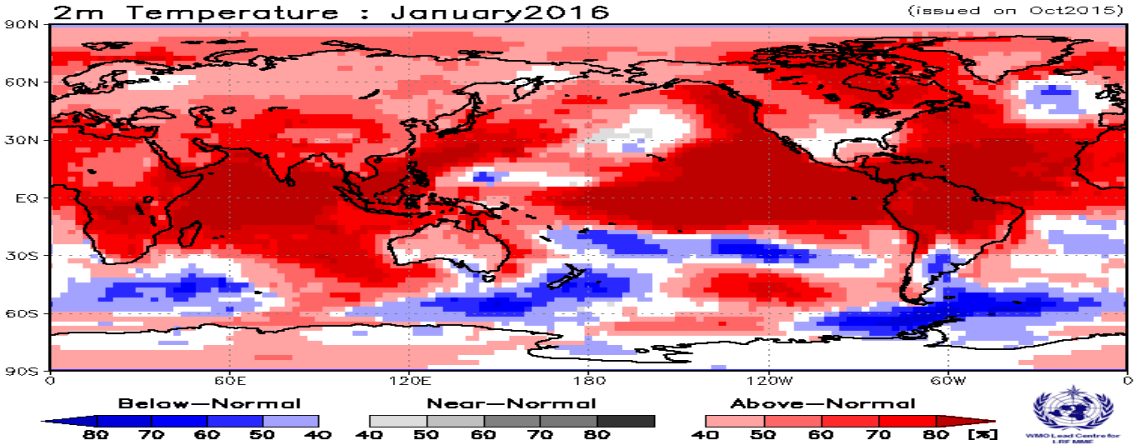
MODELS:

- GPC_Seoul
- Beijing
- CPTEC
- EXETER
- Melbourne
- Montreal_cancm3
- Montreal_cancm4
- Moscow
- Pretoria
- Tokyo
- Washington

December 2015



January 2016



http://www.wmolc.org/

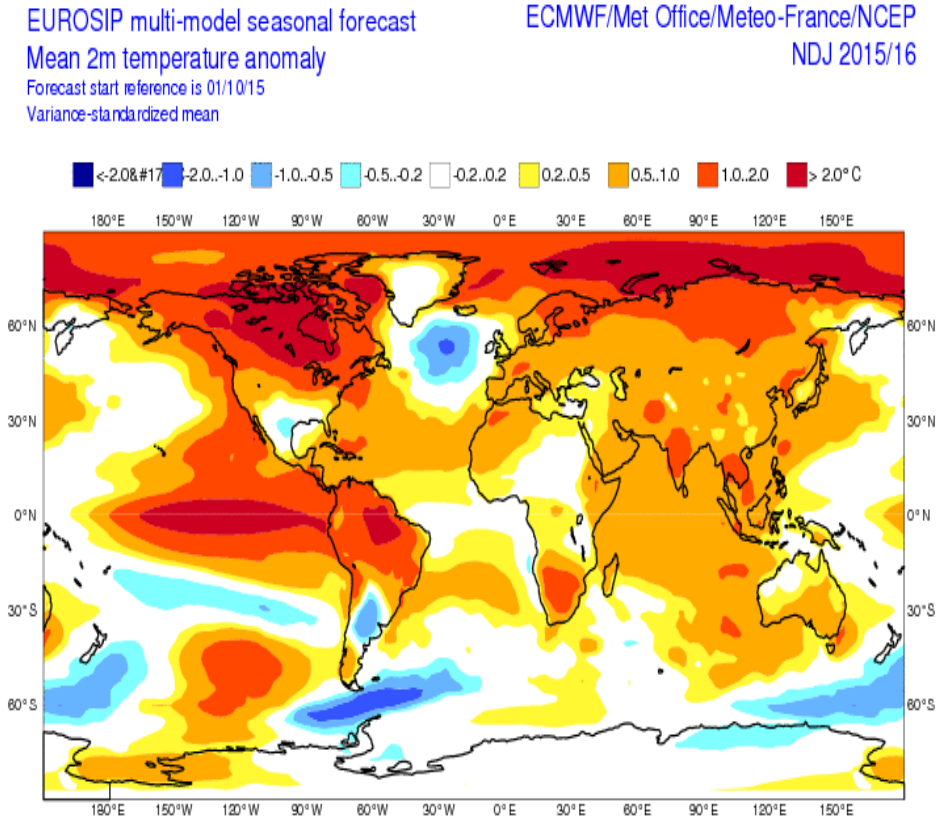
The forecast was issued in October 2015

NORTH EURASIA CLIMATE CENTRE

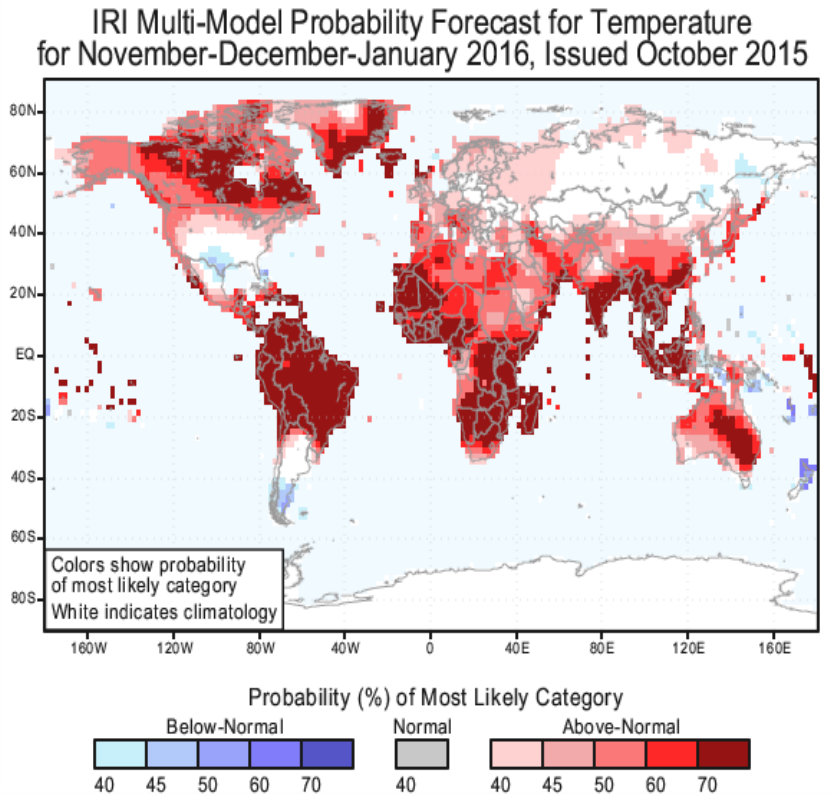
FORECASTS OF AIR TEMPERATURE
THE PROBABILISTIC FORECASTS

November 2015 – January 2016

EUROSIP



IRI

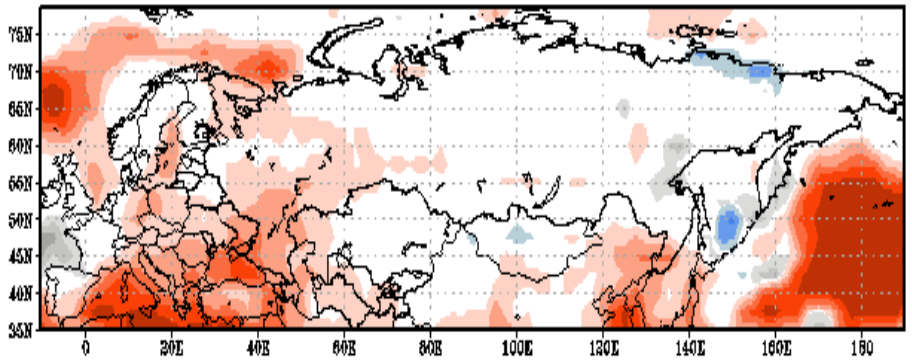


The forecast was issued in October 2015

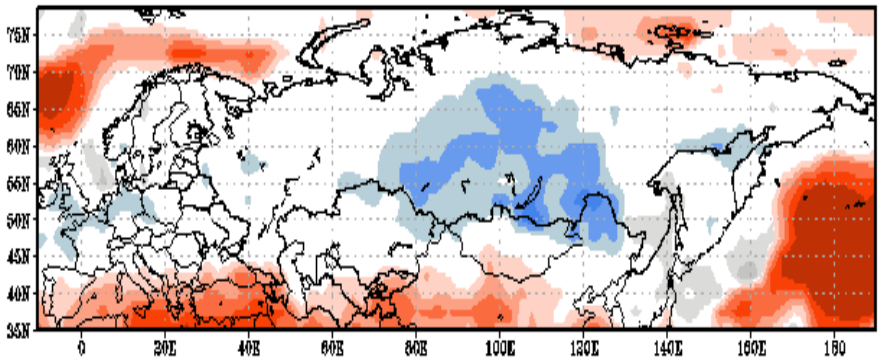
NORTH EURASIA CLIMATE CENTRE

FORECASTS OF AIR TEMPERATURE
THE PROBABILISTIC FORECASTS
MODELS: HMC(SL-AV) and MGO

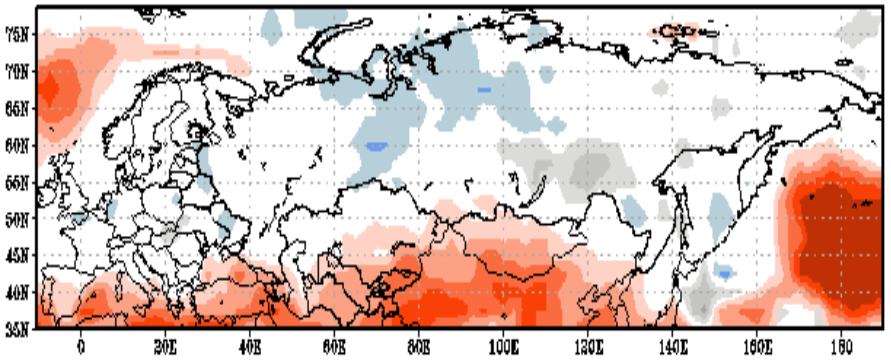
December 2015



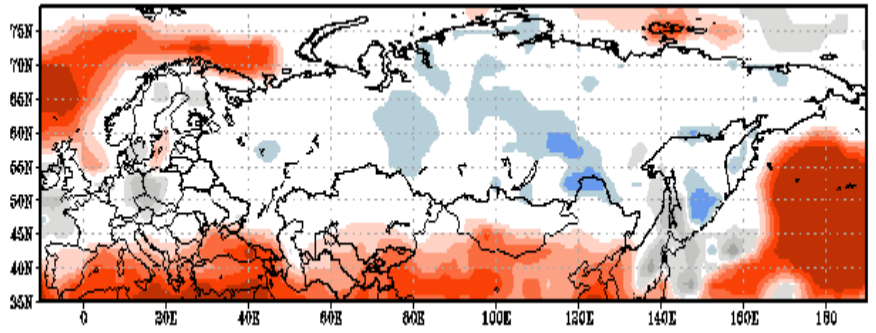
January 2016



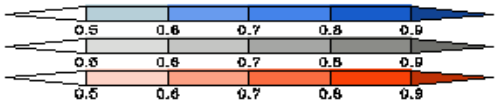
February 2016



December 2015 - January 2016



issued on October 2015



Below normal
Near normal
Above normal

http://neacc.meteoinfo.ru

NORTH EURASIA CLIMATE CENTRE

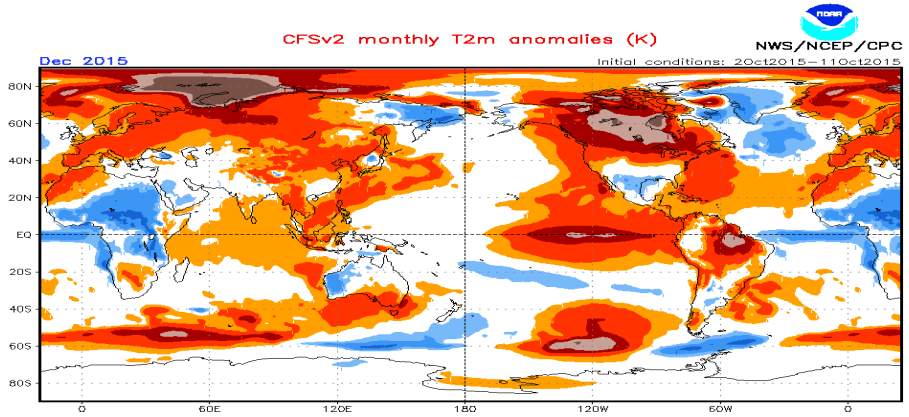
FORECASTS OF AIR TEMPERATURE

THE DETERMINISTIC FORECASTS

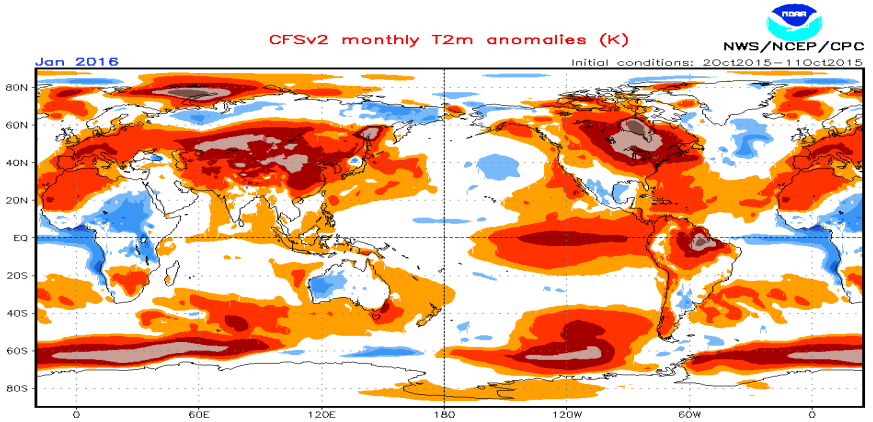
CLIMATE PREDICTION CENTRE

NATIONAL WEATHER SERVICE of USA

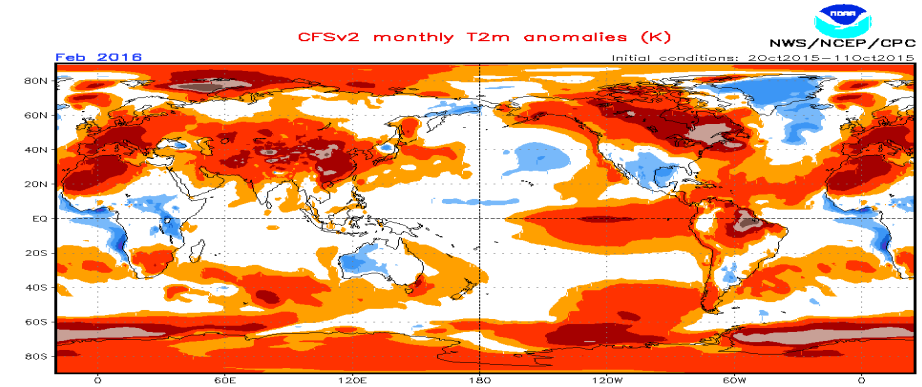
December 2015



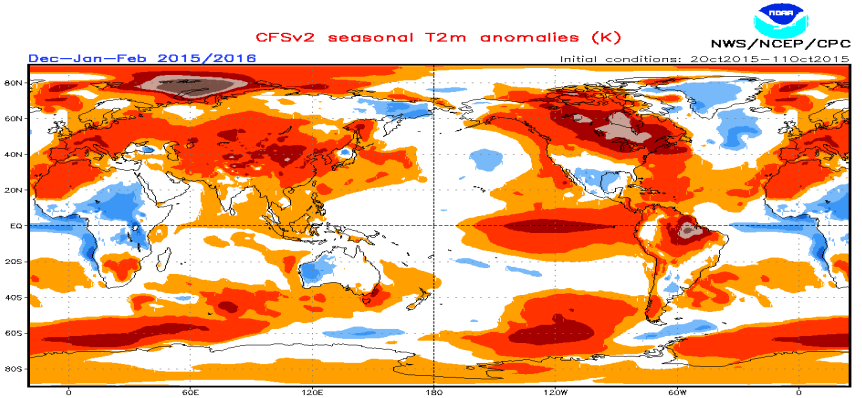
January 2016

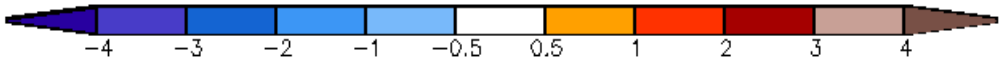


February 2016



December 2015- February 2016





issued on November 2015

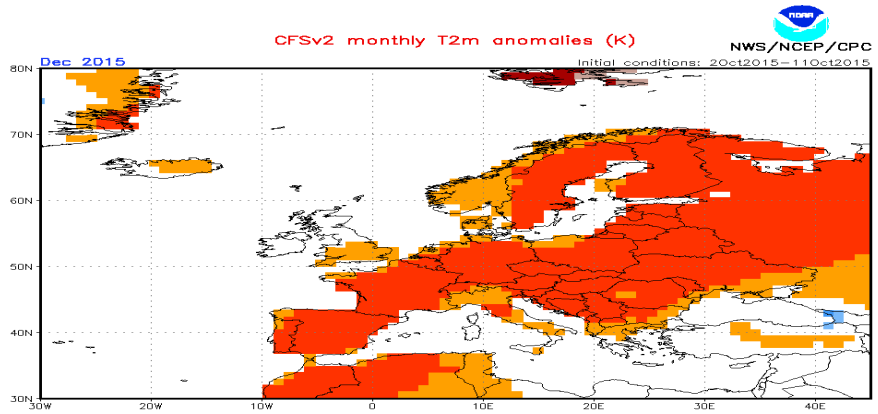
http://www.cpc.ncep.noaa.gov/products/CFSv2/CFSv2seasonal.shtml

NORTH EURASIA CLIMATE CENTRE

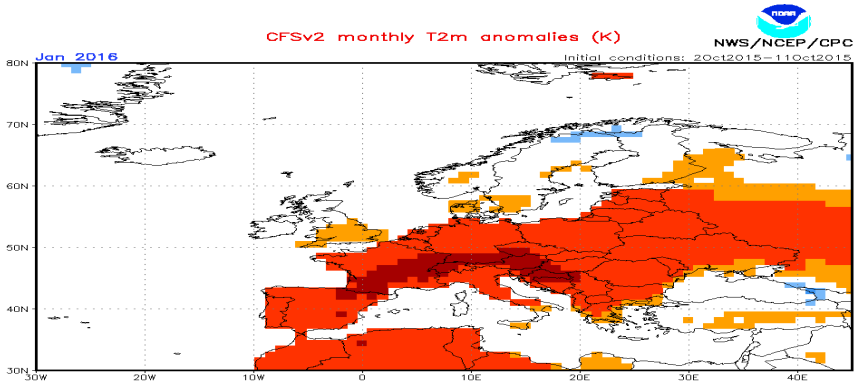
DETERMINISTIC FORECASTS OF AIR TEMPERATURE

CLIMATE PREDICTION CENTRE
NATIONAL WEATHER SERVICE of USA

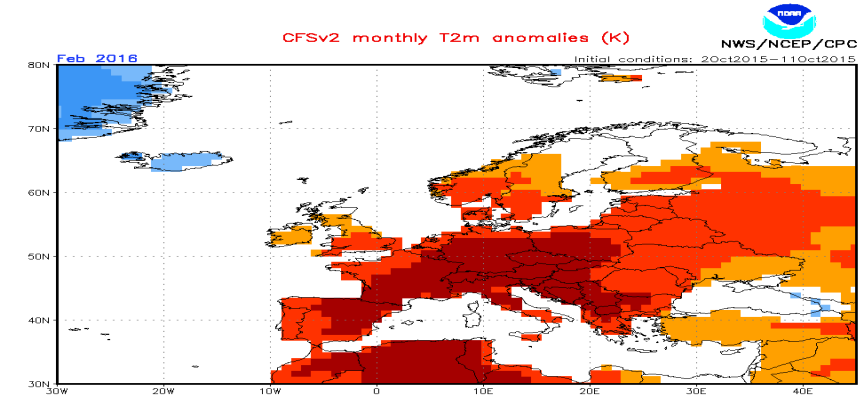
December 2015



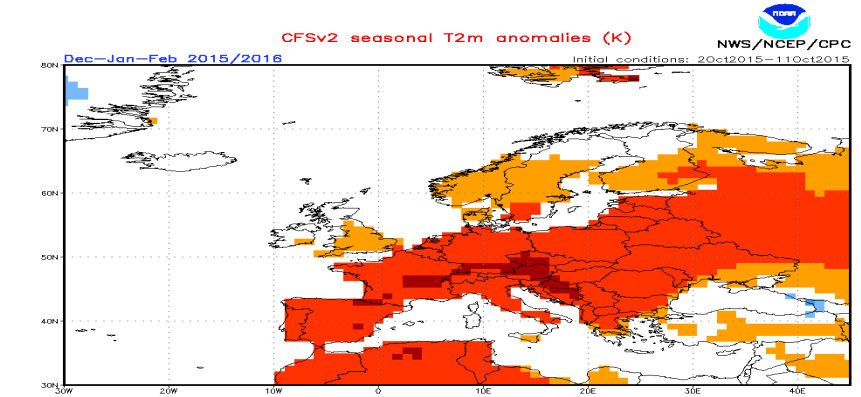
January 2016



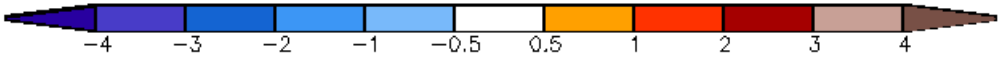
February 2016



December 2015-February 2016



issued on November 2015

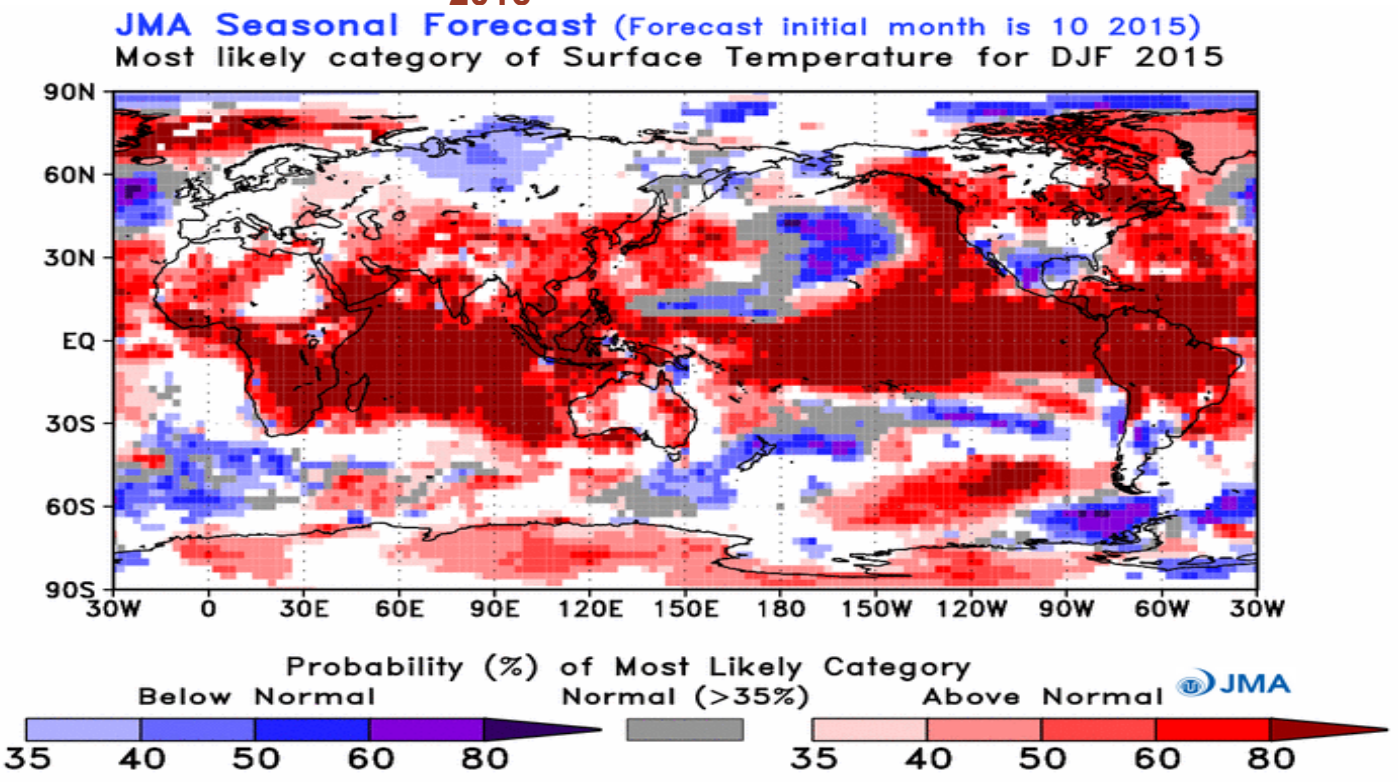


http://www.cpc.ncep.noaa.gov/products/CFSv2/CFSv2seasonal.shtml

FORECASTS OF AIR TEMPERATURE
THE PROBABILISTIC FORECASTS

TOKYO CLIMATE CENTRE

December 2015 – February 2016



issued on October 2015

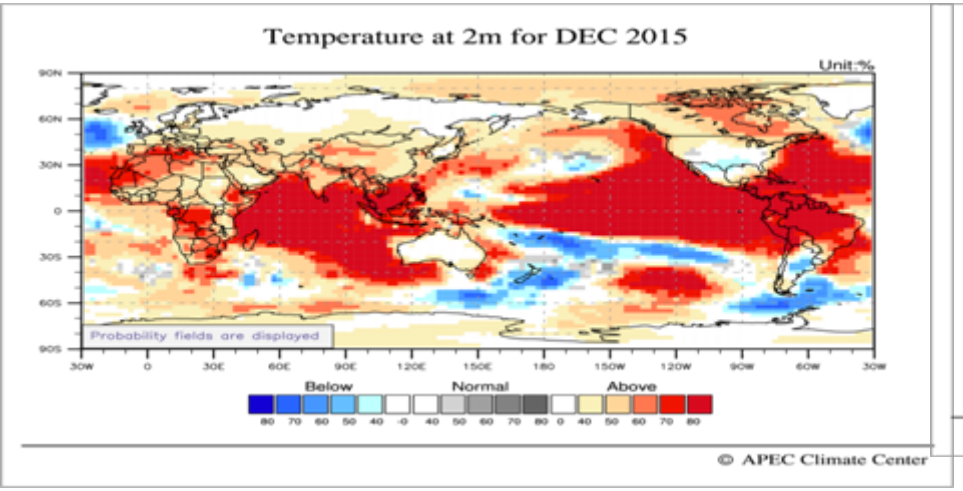
http://ds.data.jma.go.jp/tcc/tcc/products/model/index.html

NORTH EURASIA CLIMATE CENTRE

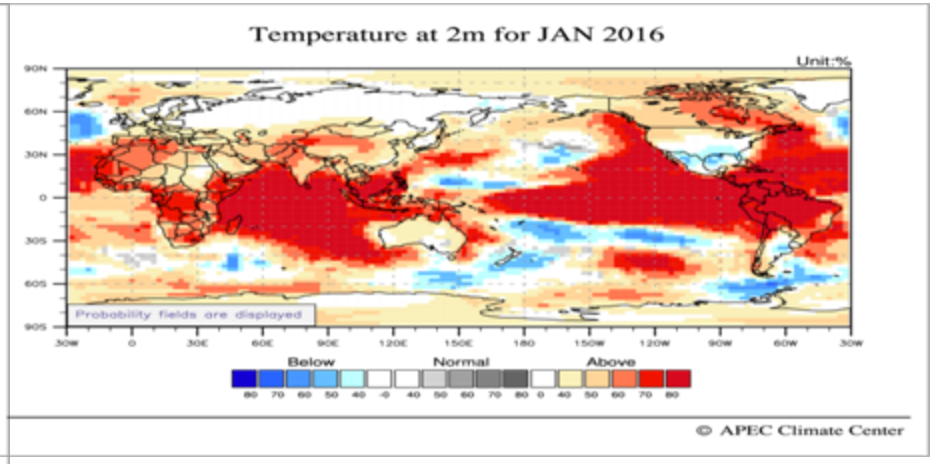
FORECASTS OF AIR TEMPERATURE
THE PROBABILISTIC FORECASTS

APEC CLIMATE CENTRE

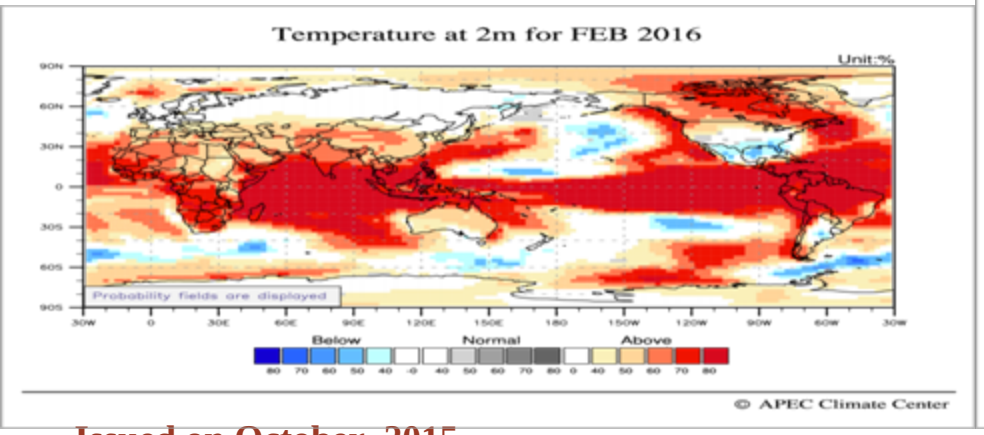
December 2015



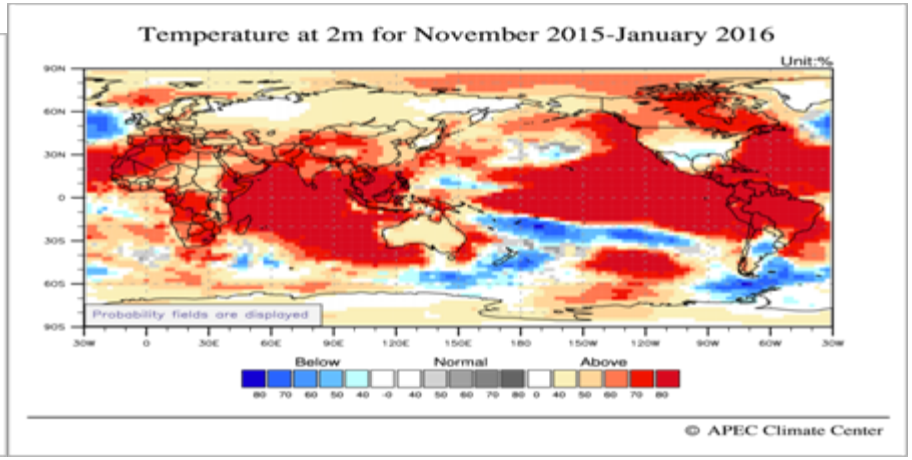
January 2016



February 2016



November 2015 – January 2016



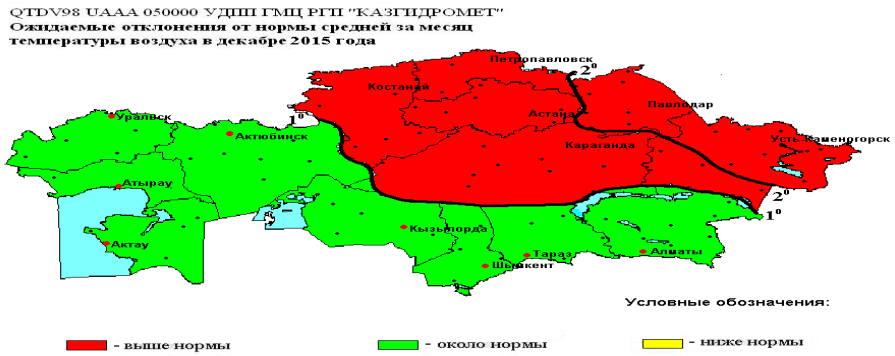
Issued on October 2015

http://www.apcc21.org/eng/service/6mon/ps/japcc030703.jsp

NORTH EURASIA CLIMATE CENTRE

THE DETERMINISTIC FORECASTS OF AIR TEMPERATURE

December 2015



January 2016

February 2016

Kazakhstan

issued on October 2015

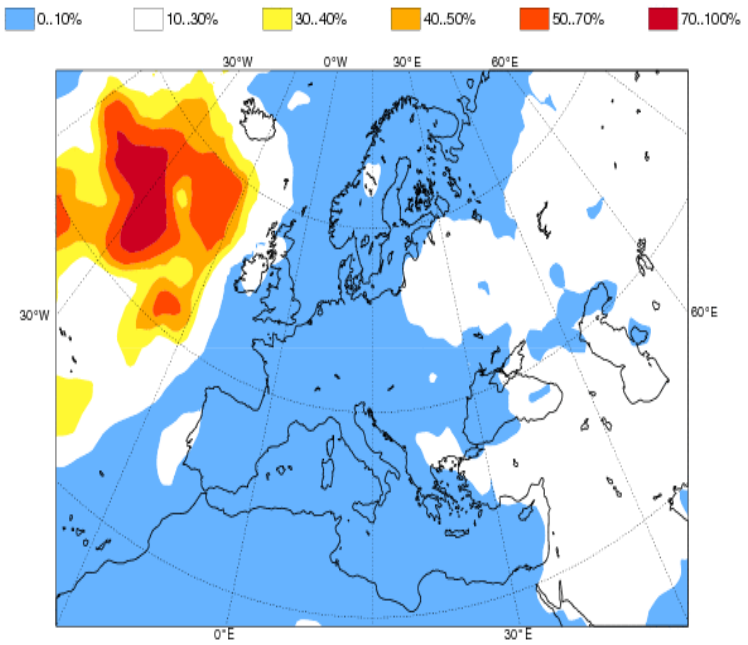
FORECASTS OF AIR TEMPERATURE
THE PROBABILISTIC FORECASTS
ECMWF
November 2015 – January 2016

METEO FRANCE

GLOBAL CLIMATE BULLETIN n°197 November2015

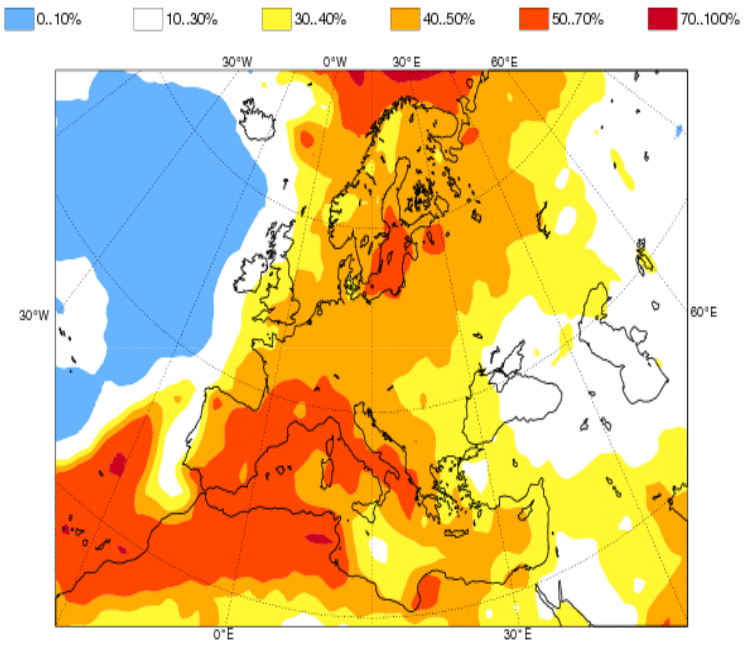
ECMWF Seasonal Forecast
Prob(lowest 20% of climatology) - 2m temperature
Forecast start reference is 01/10/15
Ensemble size = 51, climate size = 450

System 4
NDJ 2015/16



ECMWF Seasonal Forecast
Prob(highest 20% of climatology) - 2m temperature
Forecast start reference is 01/10/15
Ensemble size = 51, climate size = 450

System 4
NDJ 2015/16



Probability of « extreme » below normal conditions (left - lowest ~20% of the distribution) and "extreme" above normal conditions (right – highest ~20% of the distribution).

issued on October 2015

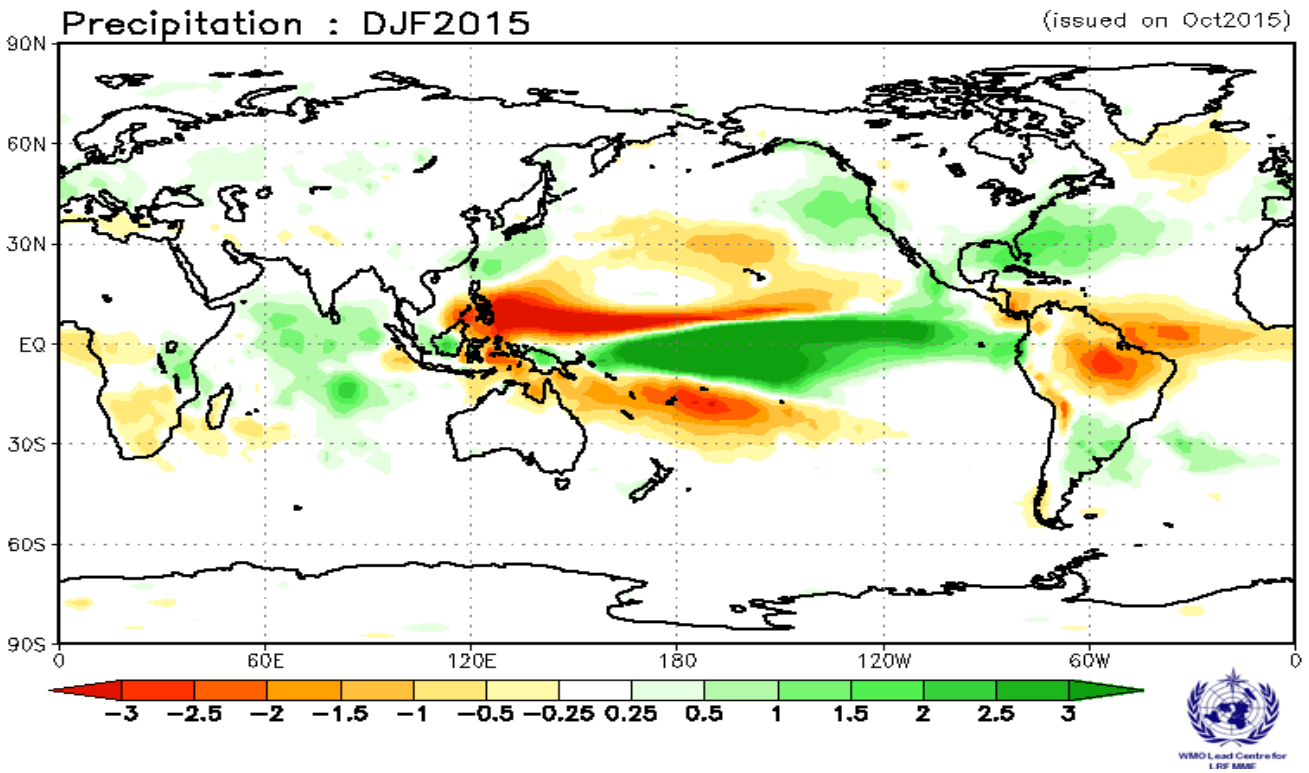
FORECASTS OF PRECIPITATION

LC MMELRF-WMO Lead Centre for MME LRF

December 2015 – February 2016

MODELS:

- Seul
- Washington
- Toulouse
- Exeter
- CPTEC
- ECMWF
- Melbourne
- Montreal



issued on October 2015

https://www.wmolc.org/

NORTH EURASIA CLIMATE CENTRE

PRECIPITATION

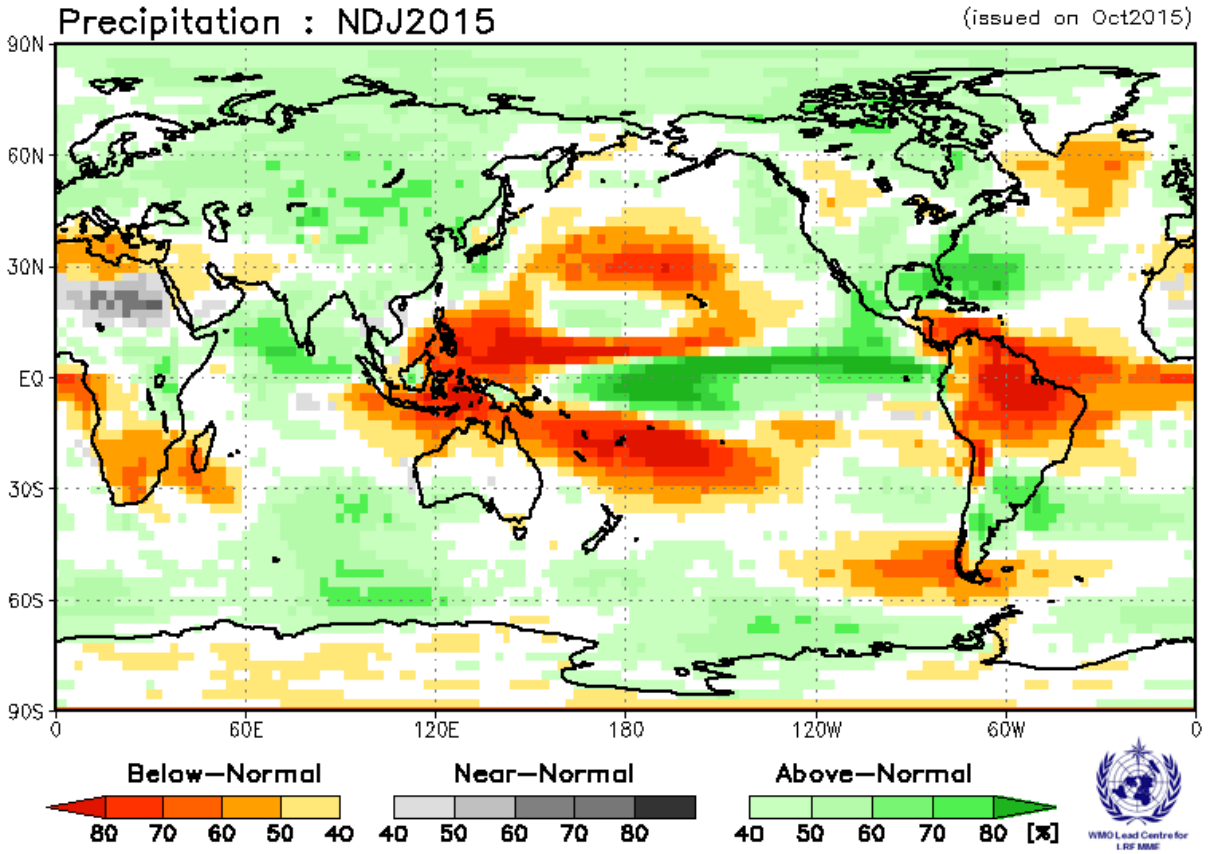
LC MMELRF-WMO Lead Centre for MME LRF

THE PROBABILISTIC FORECASTS

November 2015 – January 2016

MODELS:

- GPC_Seoul
- Beijing
- CPTEC
- EXETER
- Melbourne
- Montreal_cancm3
- Montreal_cancm4
- Moscow
- Pretoria
- Tokyo
- Washington



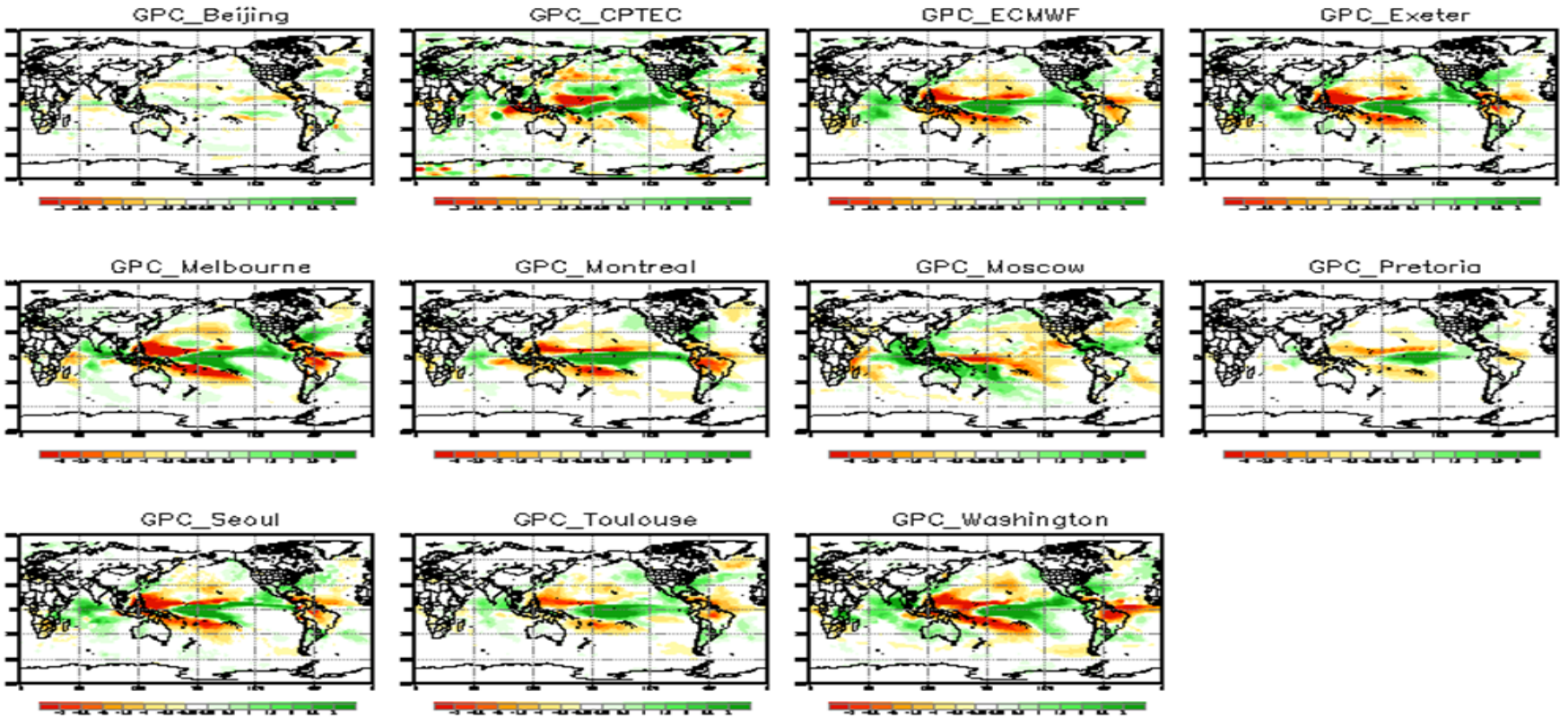
http://www.wmolc.org/

issued on October 2015

PRECIPITATION

LC MMELRF-WMO Lead Centre for MME LRF

Ensemble average: November 2015 – January 2016



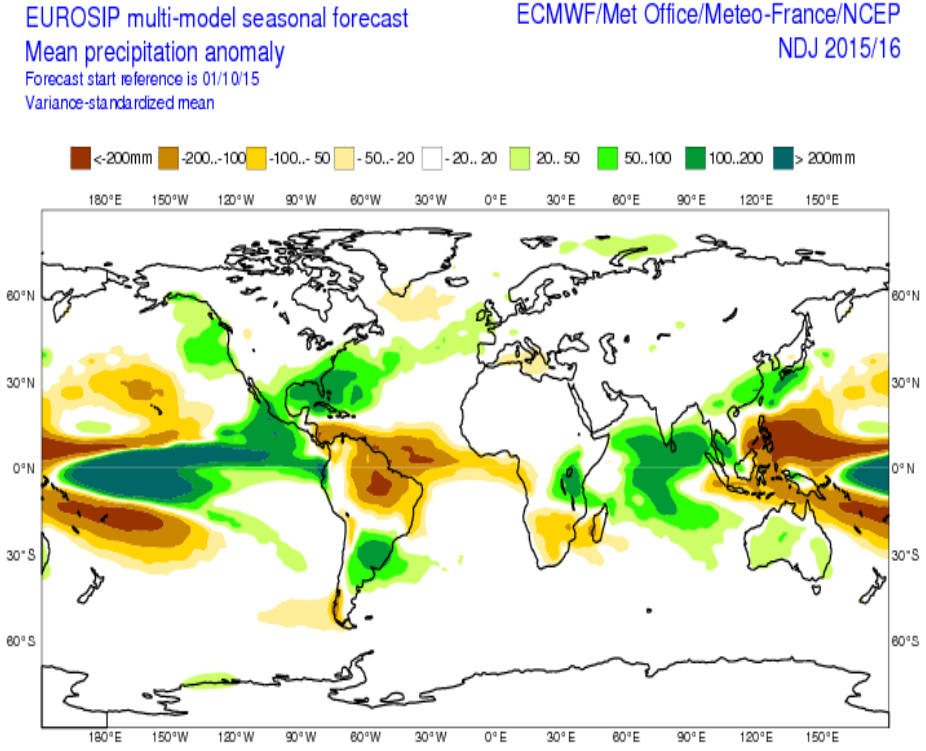
issued on October 2015.

https://www.wmolc.org/

PRECIPITATION
THE PROBABILISTIC FORECASTS

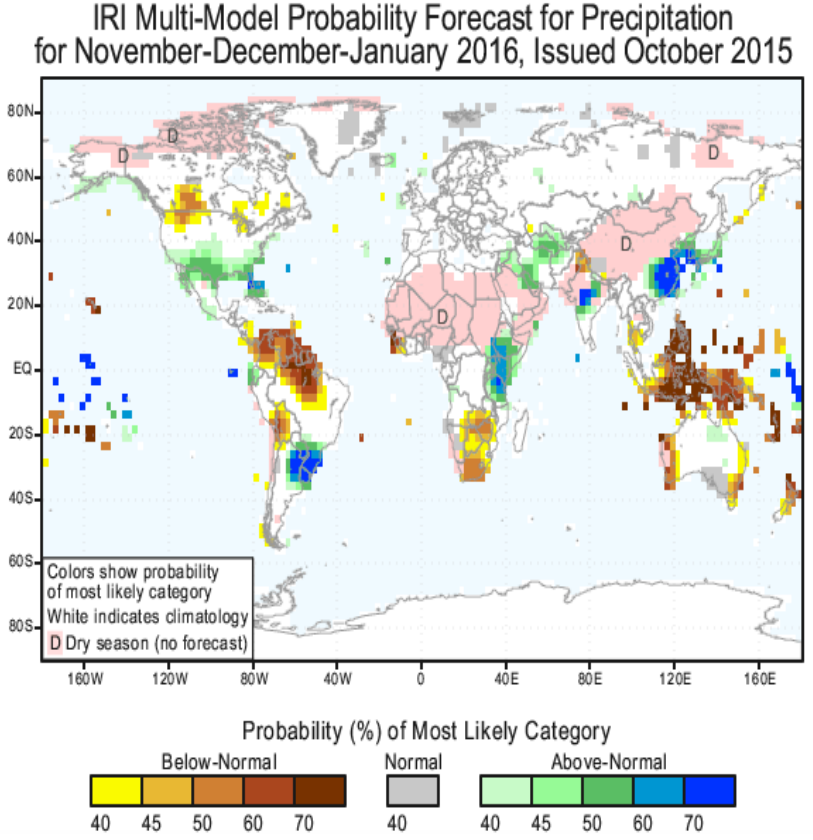
November 2015 – January 2016

EUROSIP



Issued October 2015

IRI

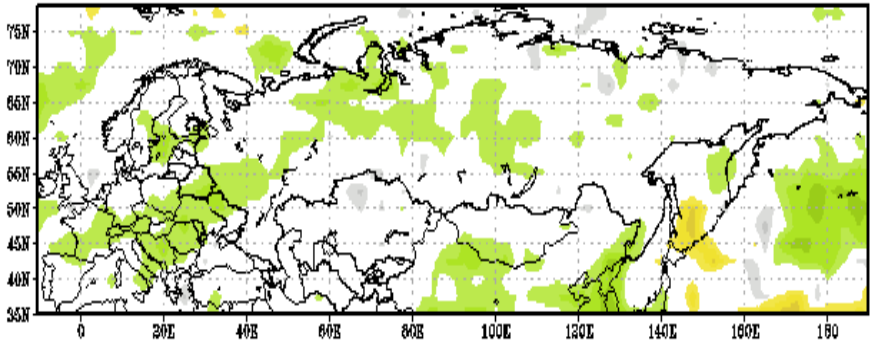


NORTH EURASIA CLIMATE CENTRE

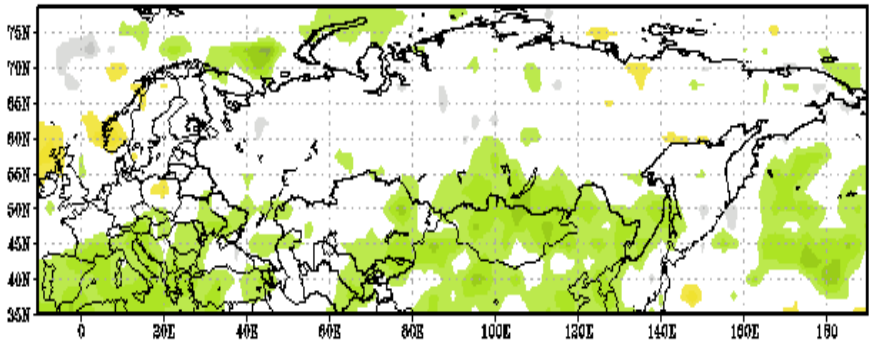
THE PROBABILISTIC FORECASTS OF PRECIPITATION

HIDROMETEOROLOGICAL CENTRE OF RUSSIA (SL-AV) and MGO MODEL

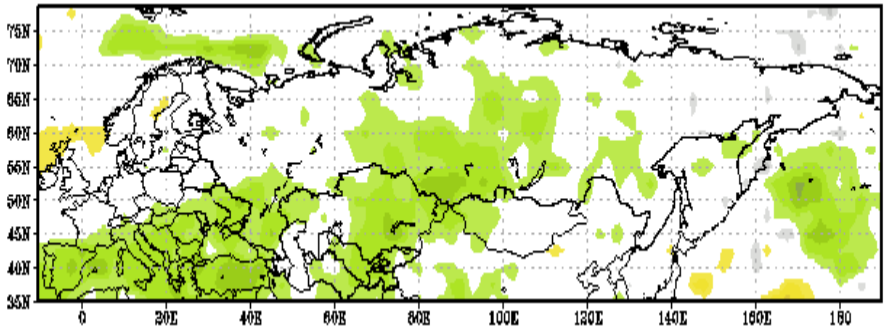
December 2015



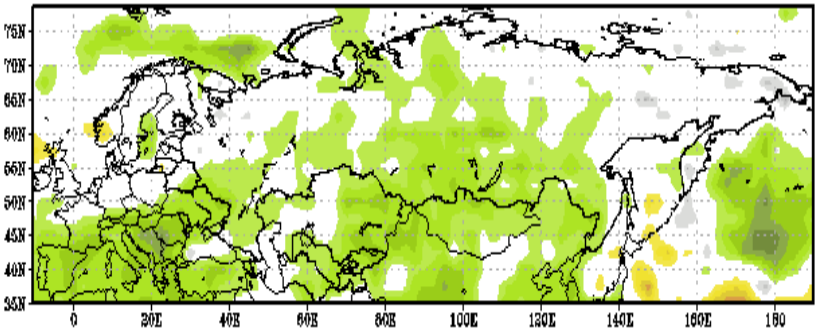
January 2016

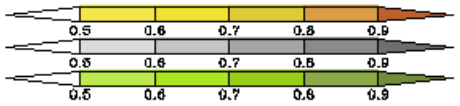


February 2016



December 2015 - January 2016





Below normal
Near normal
Above normal

Issued November 2014

http://neacc.meteoinfo.ru

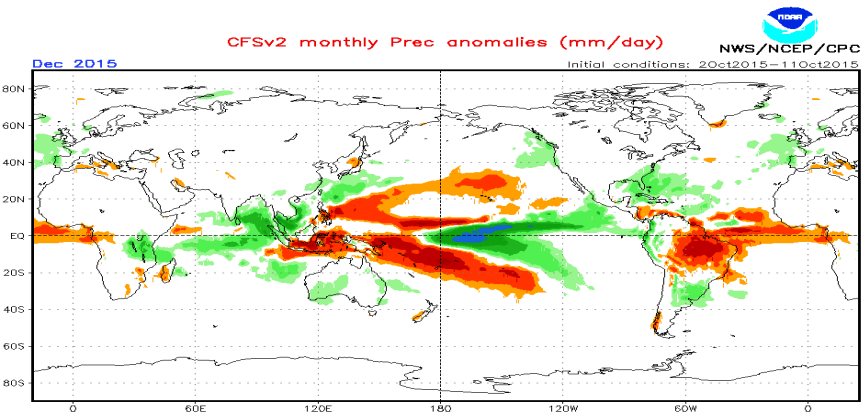
NORTH EURASIA CLIMATE CENTRE

DETERMINISTIC FORECASTS OF PRECIPITATION

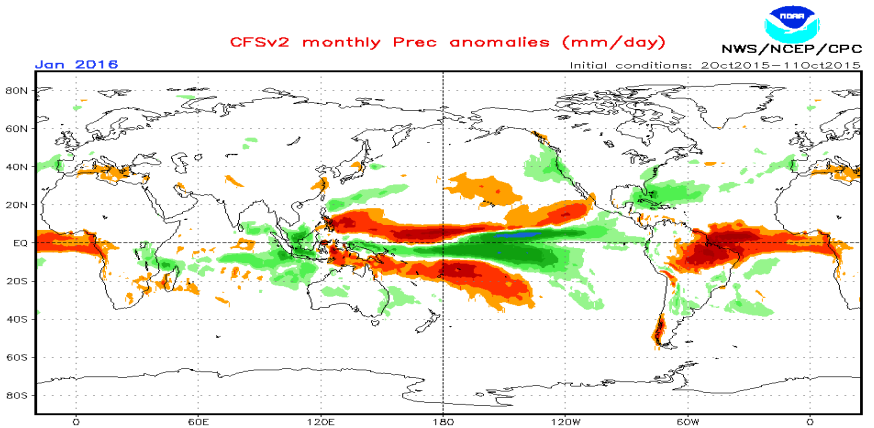
CLIMATE PREDICTION CENTRE

NATIONAL WEATHER SERVICE of USA

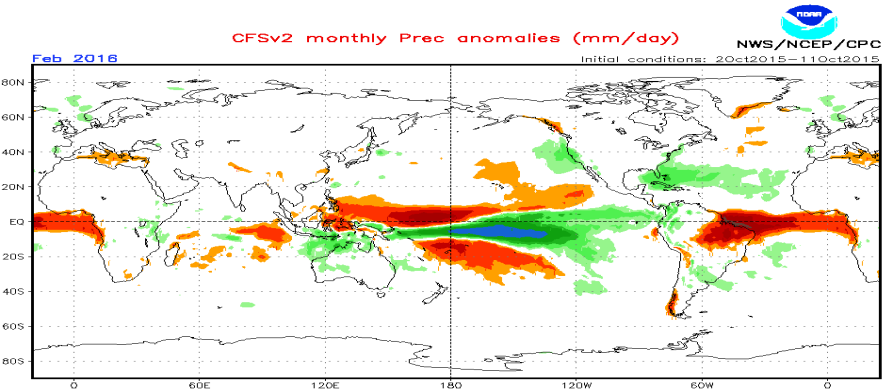
December 2015



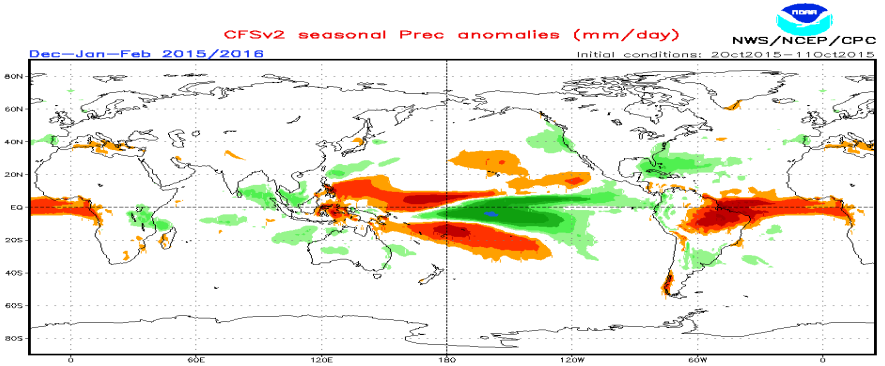
January 2016

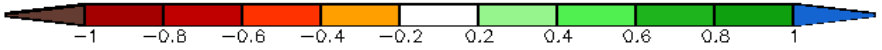


February 2016



December 2015-February 2016



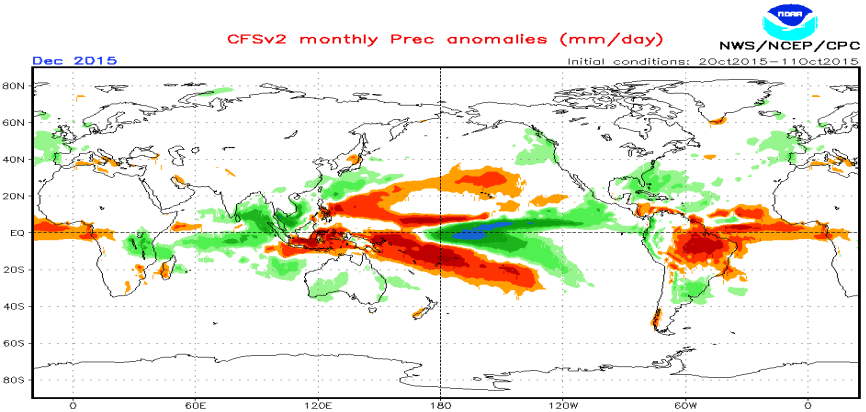


Issued November 2015

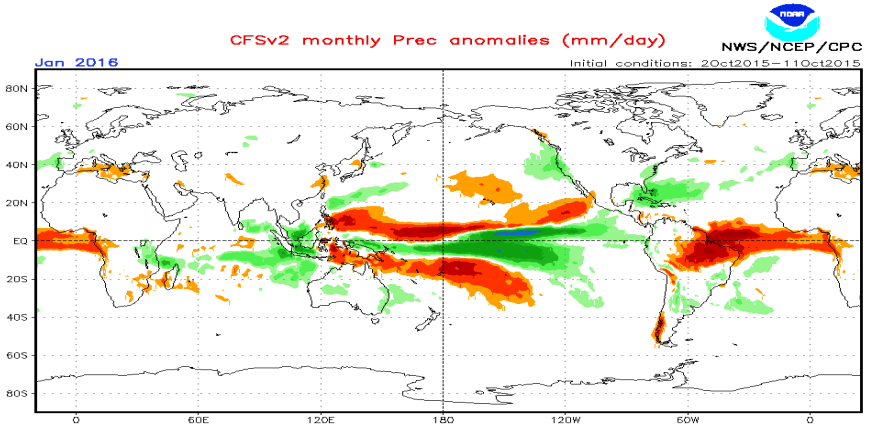
http://www.cpc.ncep.noaa.gov/products/CFSv2/CFSv2seasonal.shtml

ОСАДКИ
ДЕТЕРМИНИРОВАННЫЕ ПРОГНОЗЫ
CLIMATE PREDICTION CENTRE
NATIONAL WEATHER SERVICE of USA

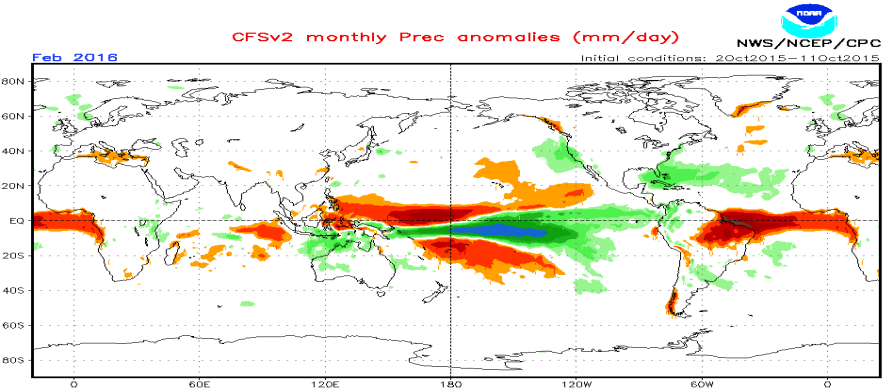
Декабрь 2015



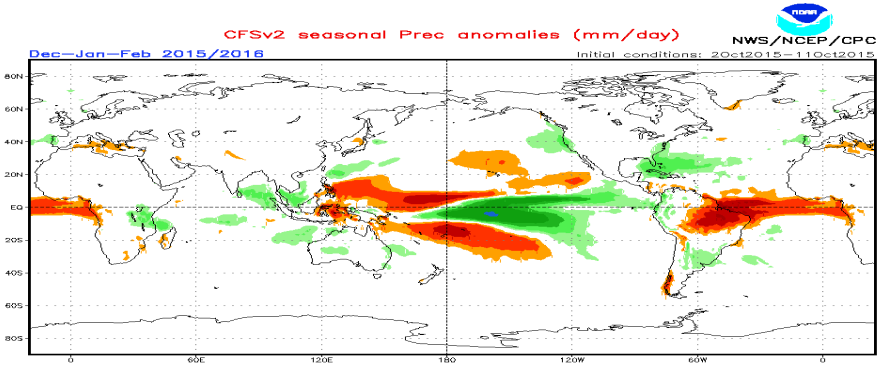
Январь 2016

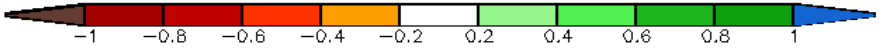


Февраль 2016



Декабрь 2015-Февраль 2016





Прогноз составлен в ноябре 2015 г.

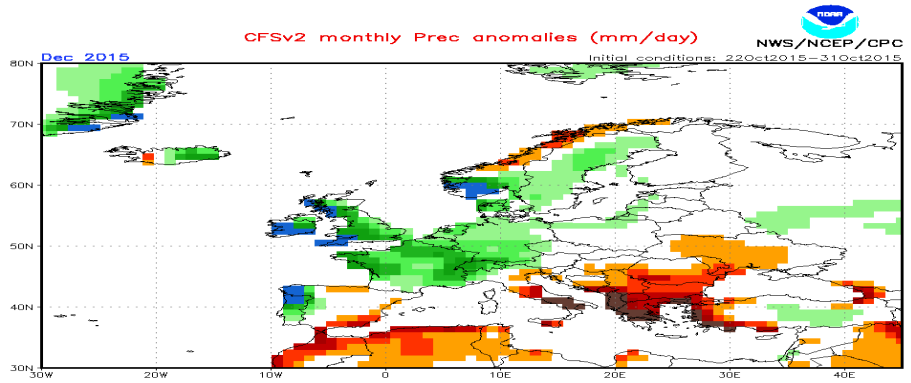
http://www.cpc.ncep.noaa.gov/products/CFSv2/CFSv2seasonal.shtml

NORTH EURASIA CLIMATE CENTRE

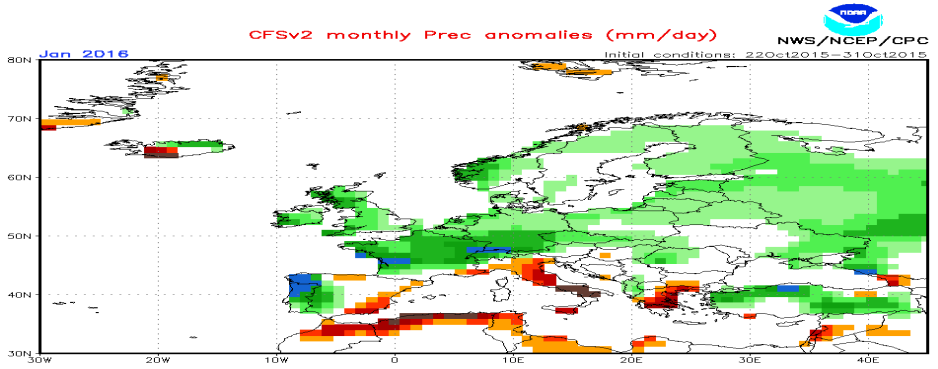
DETERMINISTIC FORECASTS OF PRECIPITATION

CLIMATE PREDICTION CENTRE
NATIONAL WEATHER SERVICE of USA

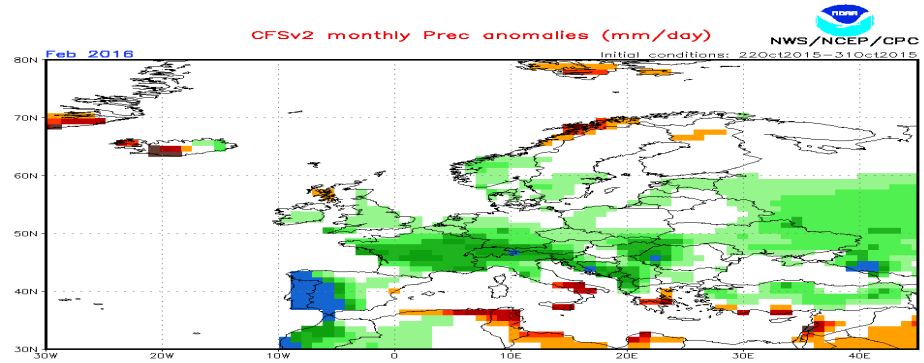
December 2015



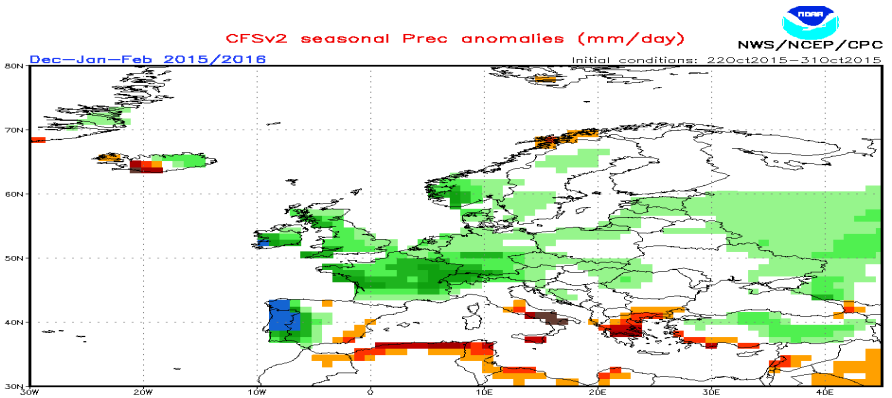
January 2016

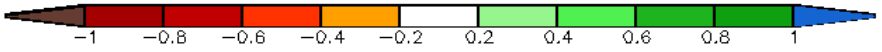


February 2016



December 2015-February 2016





Issued November 2014

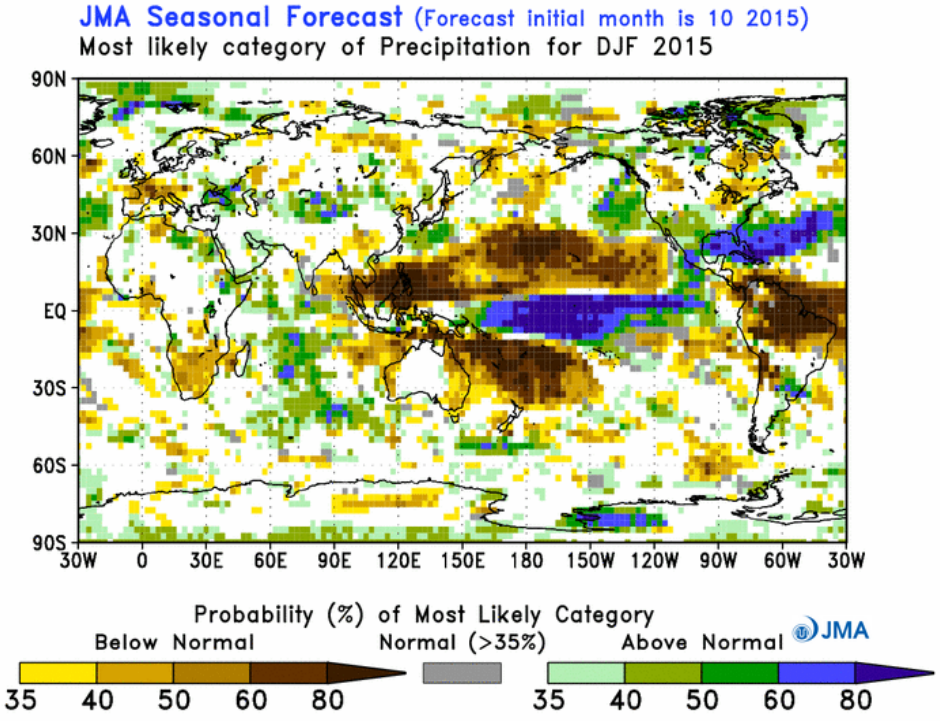
http://www.cpc.ncep.noaa.gov/products/CFSv2/CFSv2seasonal.shtml

NORTH EURASIA CLIMATE CENTRE

THE PROBABILISTIC FORECASTS OF PRECIPITATION

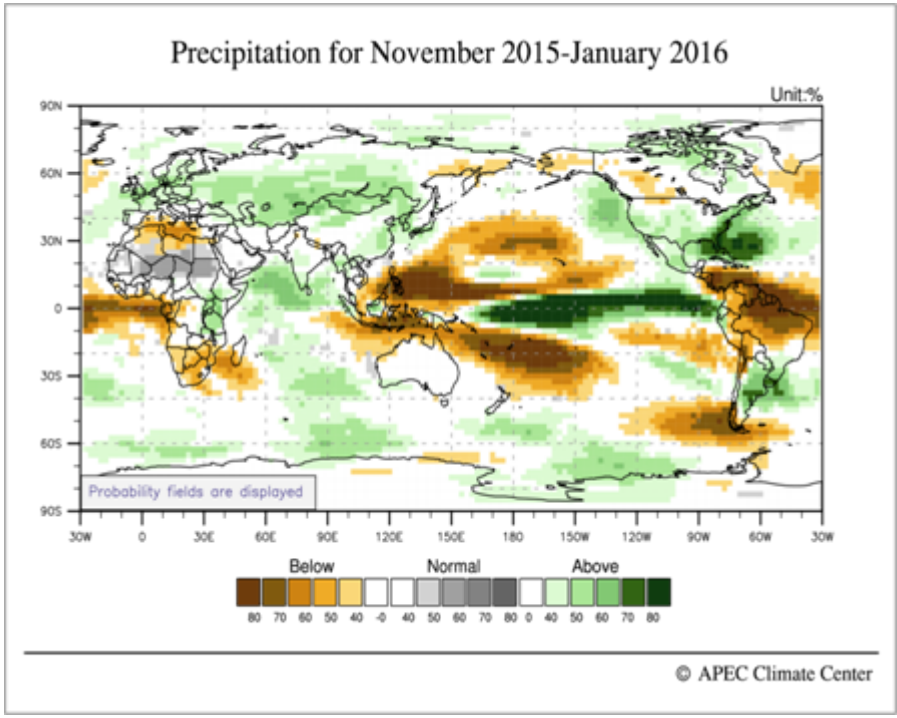
December 2015 - February 2015

TOKYO CLIMATE CENTRE



November 2015 - January 2015

APCC



Issued October 2015

http://ds.data.jma.go.jp/tcc/tcc/products/model/index.html

http://www.apcc21.org/eng/service/6mon/ps/japcc030703.jsp

METEO FRANCE

GLOBAL CLIMATE BULLETIN n°197 November2015

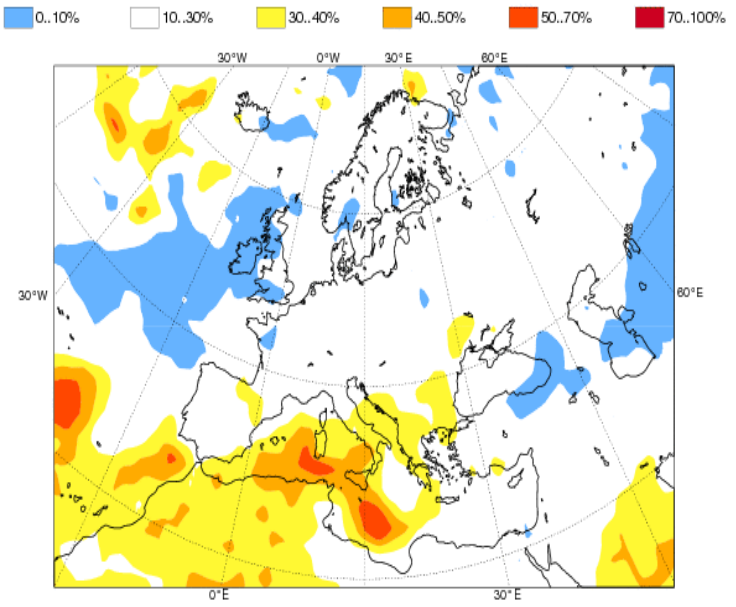
FORECASTS OF AIR TEMPERATURE
THE PROBABILISTIC FORECASTS

ECMWF

November 2015 – January 2016

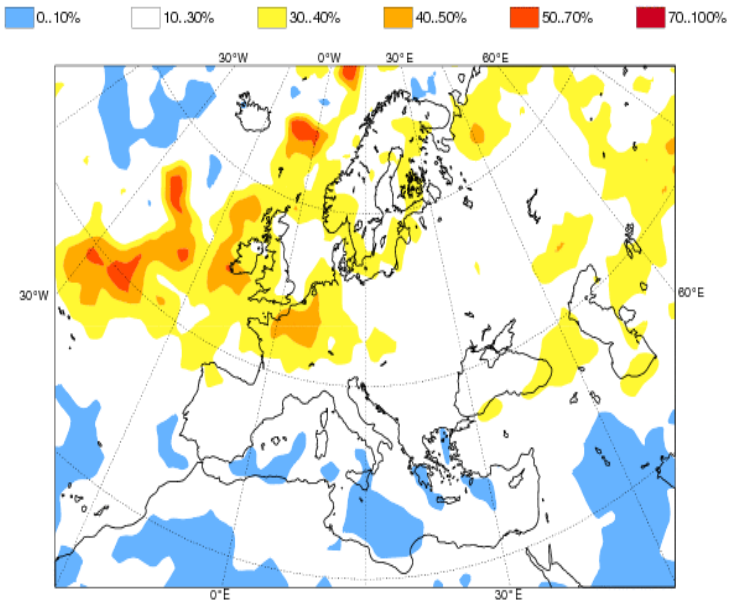
ECMWF Seasonal Forecast
Prob(lowest 20% of climatology) - precipitation
Forecast start reference is 01/10/15
Ensemble size = 51, climate size = 450

System 4
NDJ 2015/16



ECMWF Seasonal Forecast
Prob(highest 20% of climatology) - precipitation
Forecast start reference is 01/10/15
Ensemble size = 51, climate size = 450

System 4
NDJ 2015/16

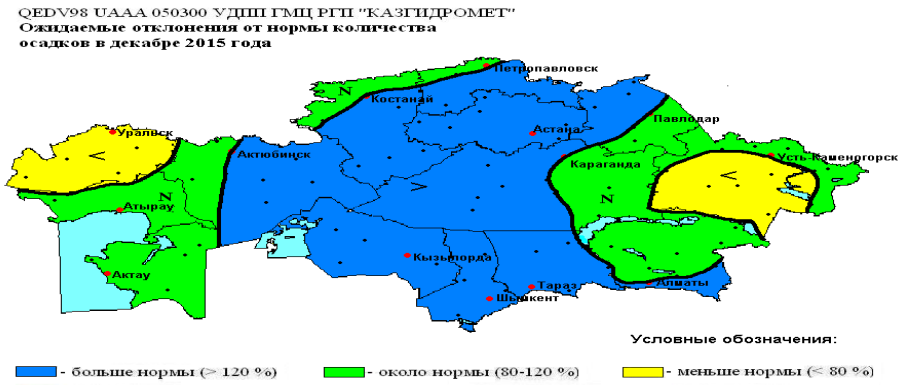


Probability of « extreme » below normal conditions (left - lowest ~20% of the distribution) and "extreme" above normal conditions (right – highest ~20% of the distribution).

Issued on October 2015

THE DETERMINISTIC FORECASTS OF PRECIPITATION

December 2015



January 2016

February 2016

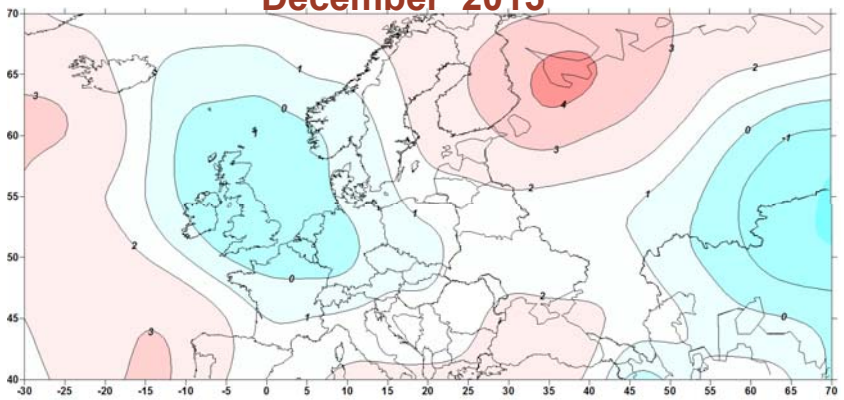
Kazakhstan

Issued on October 2015

АНОМАЛИИ ТЕМПЕРАТУРЫ и ОСАДКОВ
ДЕТЕРМИНИРОВАННЫЕ ПРОГНОЗЫ
Украина

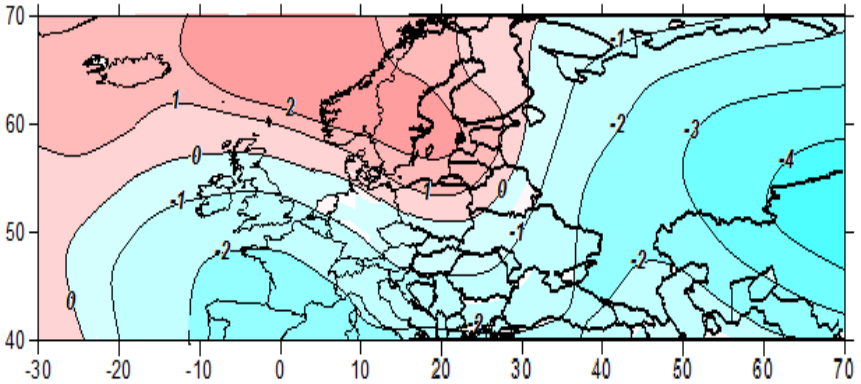
ANOMALY OF THE TEMPERATURE

December 2015



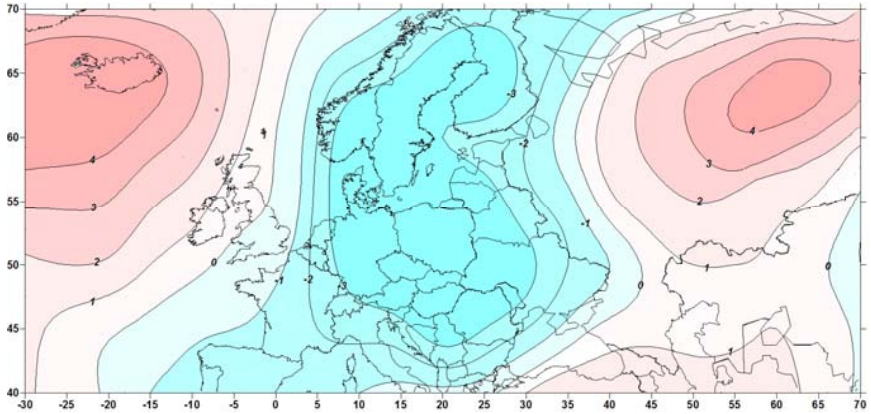
ANOMALY OF THE TEMPERATURE

January 2016



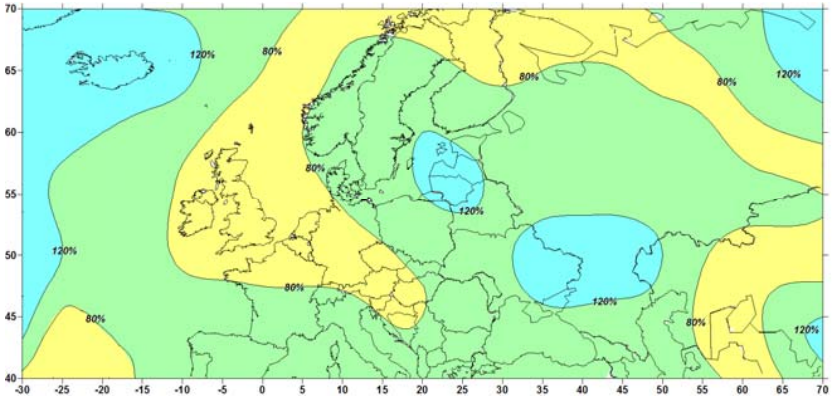
ANOMALY OF THE TEMPERATURE

February 2016



FORECASTS OF PRECIPITATION(%)

January 2015



FORECASTS OF AIR TEMPERATURE and PRECIPITATION
THE DETERMINISTIC FORECASTS

Moldova:

The mean air temperature is above normal.
The precipitation is nearly normal.

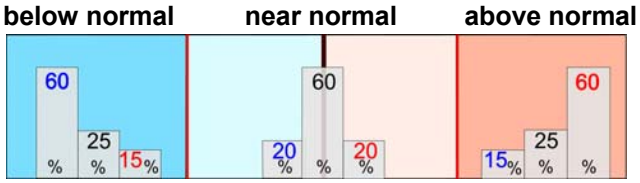
The forecast made by the statistical methods.

NORTH EURASIA CLIMATE CENTRE

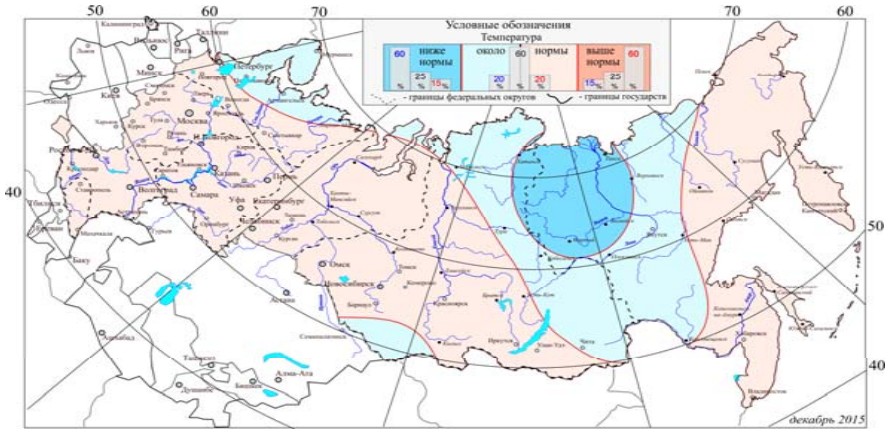
AIR TEMPERATURE

HIDROMETEOROLOGICAL CENTRE OF RUSSIA: ensemble of statistical forecasts (HMC, MGO, Arctic and Antarctic Research Institute)

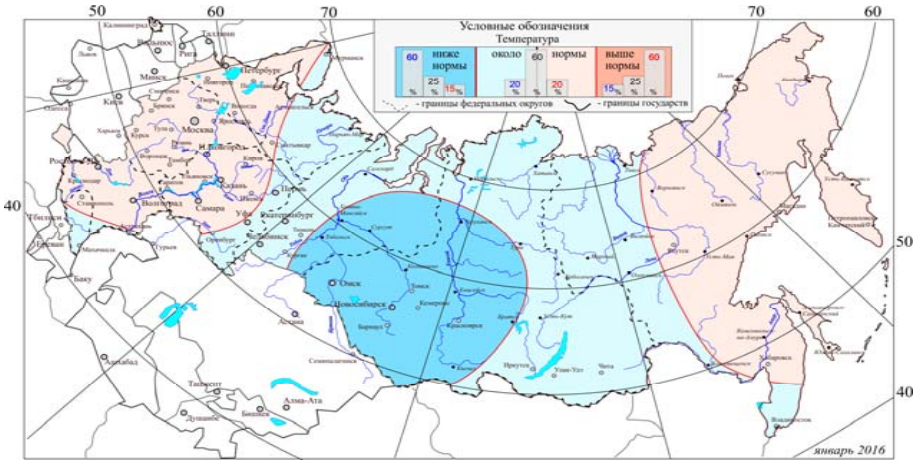
the probability distribution of the forecast for each gradation



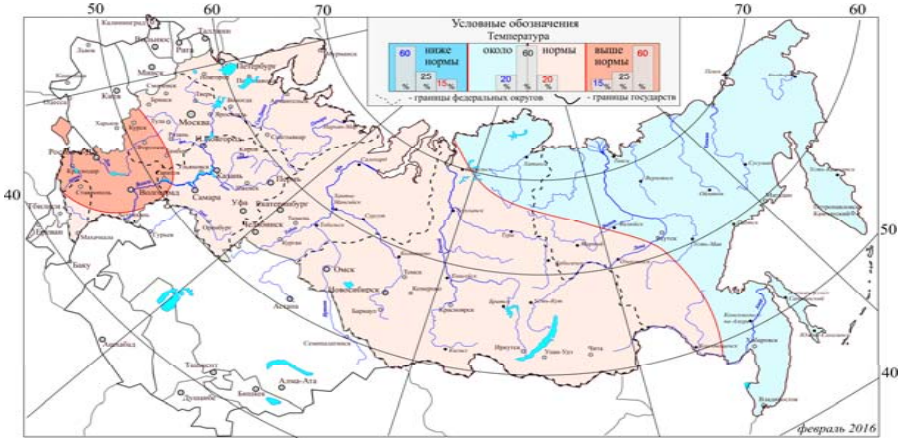
December 2015



January 2016



February 2016



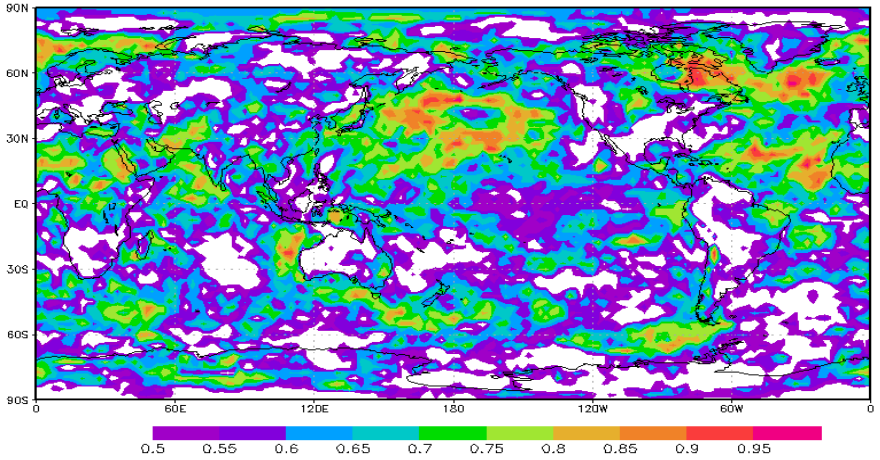
Issued September 2015

NORTH EURASIA CLIMATE CENTRE

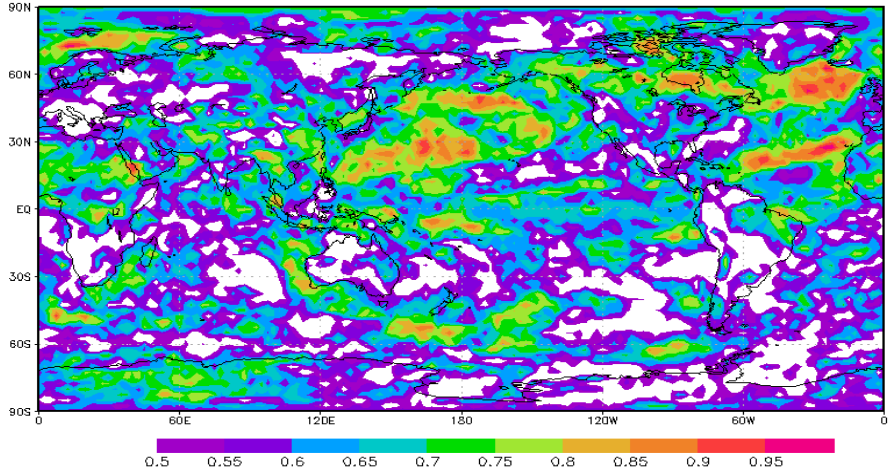
FORECAST VERIFICATION: TEMPERATURE

SL-AV, HMC

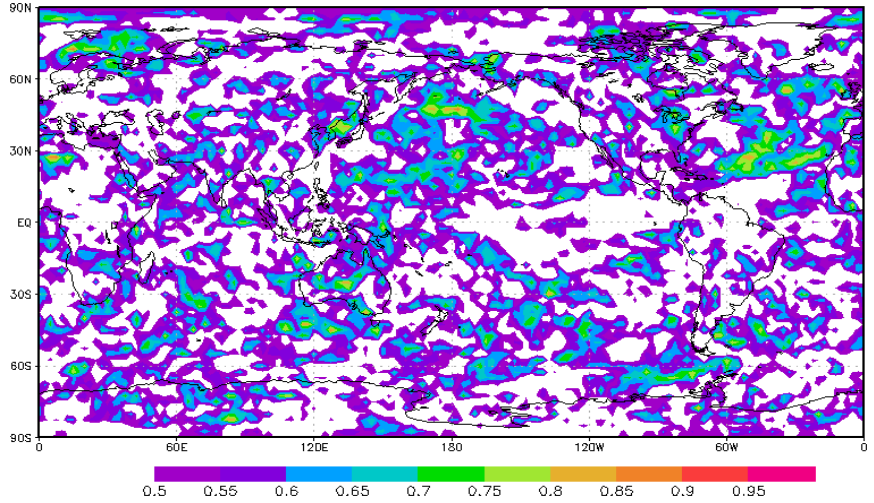
ROC_B



ROC_A



ROC_N



Scores:

ROC_A - ROC Score Above Normal

ROC_N - ROC Score Near Normal

ROC_B - ROC Score Below Normal

Verification scores are made on a historical material (1981-2010) for winter season.

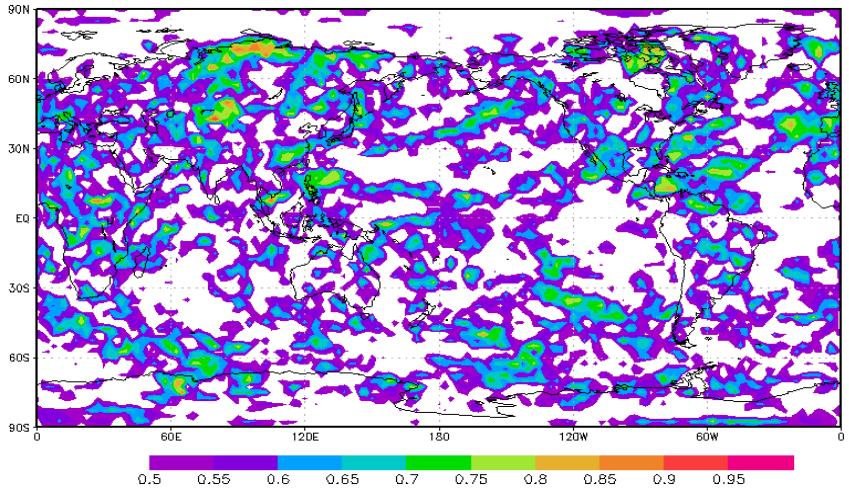
Guidance: Standardised Verification System for Long-Range Forecasts, SVSLRF, 2002. New Attachment II-8 to the *Manual on the GDPFS* (WMO-No. 485), Volume I.

Verification characteristics are operationally presented on the NEACC web-site: http://seakc.meteoinfo.ru.

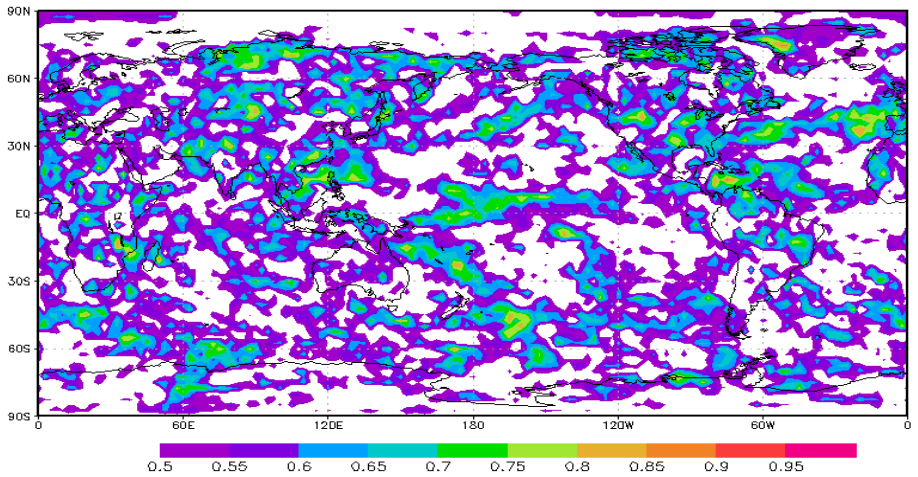
FORECAST VERIFICATION: PRECIPITATION

SL-AV, HMC

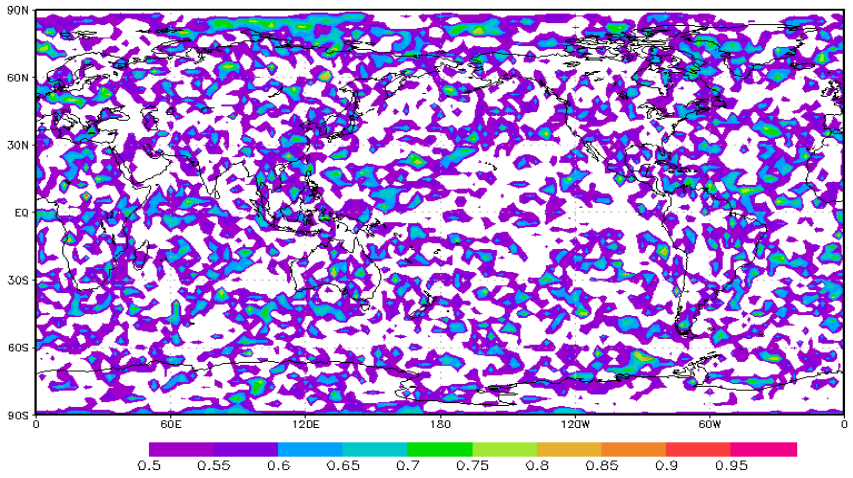
ROC_B



ROC_A



ROC_N



Scores:

ROC_A - ROC Score Above Normal

ROC_N - ROC Score Near Normal

ROC_B - ROC Score Below Normal

Verification scores are made on a historical material (1981-2010) for winter season.

Guidance: Standardised Verification System for Long-Range Forecasts, SVSLRF, 2002. New Attachment II-8 to the *Manual on the GDPFS* (WMO-No. 485), Volume I.

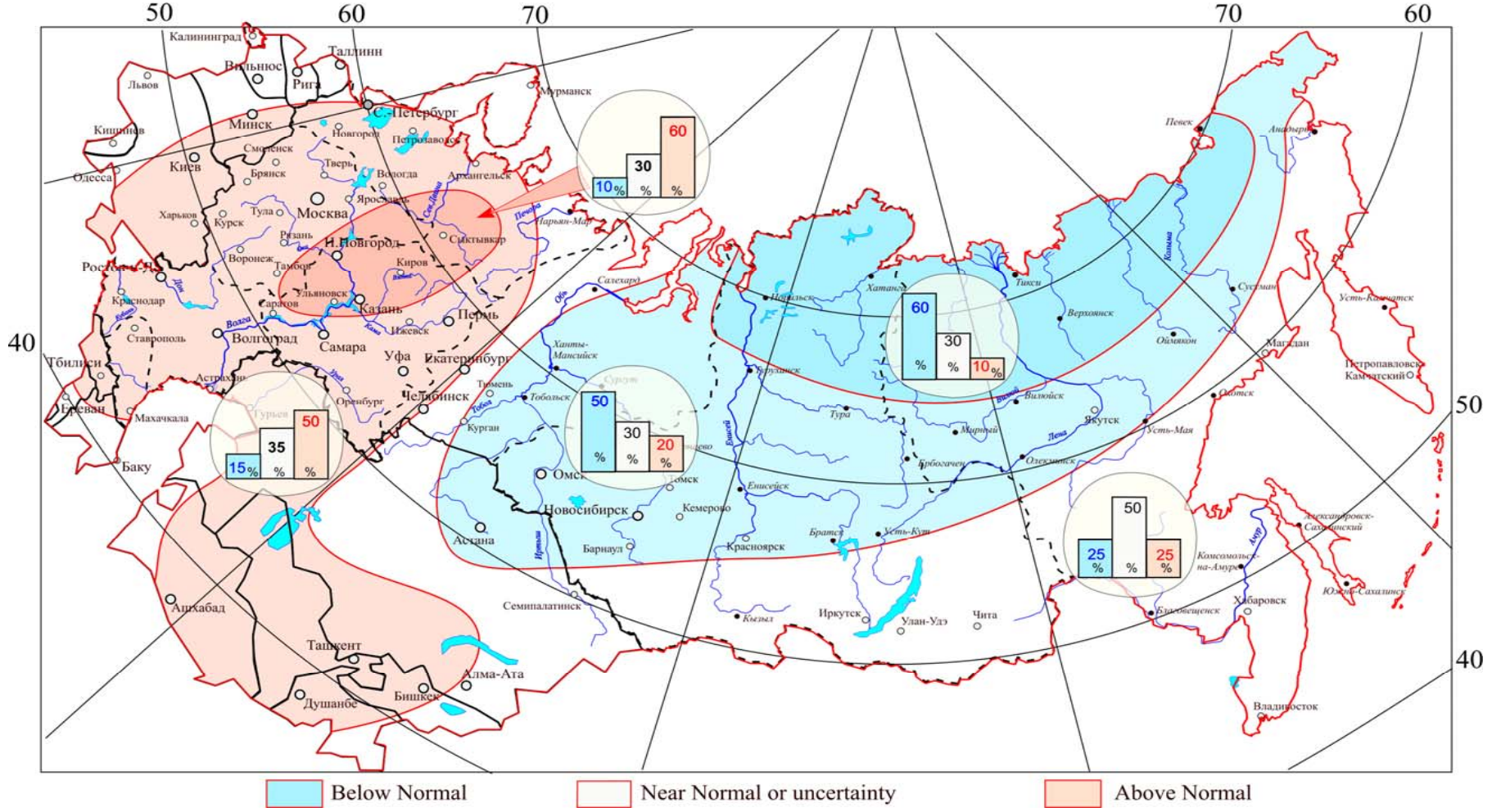
Verification characteristics are operationally presented on the NEACC web-site: http://seakc.meteoinfo.ru.

SUMMARY

- Most of the ENSO prediction models indicate a continuation of ENSO through the winter 2015-2016. The probabilities for La Nina, neutral and El Nino conditions (using -0.5C and 0.5C thresholds) over the coming DJF season are: 0%, 1% и 99 %.
- Most of the centers predict significant SST anomalies in the North Pacific Ocean connected with the positive phase of PDO. It can drive the variations of the geographical position and intensity of the Pacific maximum and the Aleutian minimum. The significant temperature and precipitation anomalies are possible in the Far East as a result.
- In the North Atlantic significant positive SST anomalies are expected near the Gulf Stream and NEZ. The negative anomalies are expected from Labrador to Europe. The forecasts of most centers indicate the signal associated with the appearance of positive SST anomalies in the Norwegian and Barents Seas.
- NEACC predict the negative phases of EA in winter 2015-2016. The negative phases of EA is associated with the positive temperature anomalies in Europe and the negative temperature anomalies over most of Siberia and Kazakhstan. The positive anomalies of precipitation are possible in the west of Europe.
- The winter season of 2015-2016 is expected warmer than normal over most of Northern Eurasia according to the most of models. The negative temperature anomalies are expected in the north-east of Far East. The cold scenario prevails in the forecasts of the NEACC.
- There are a lot of contradictions and uncertainties in the forecasts of precipitation. The precise signal is marked only in the south where exceeding precipitation is expected.

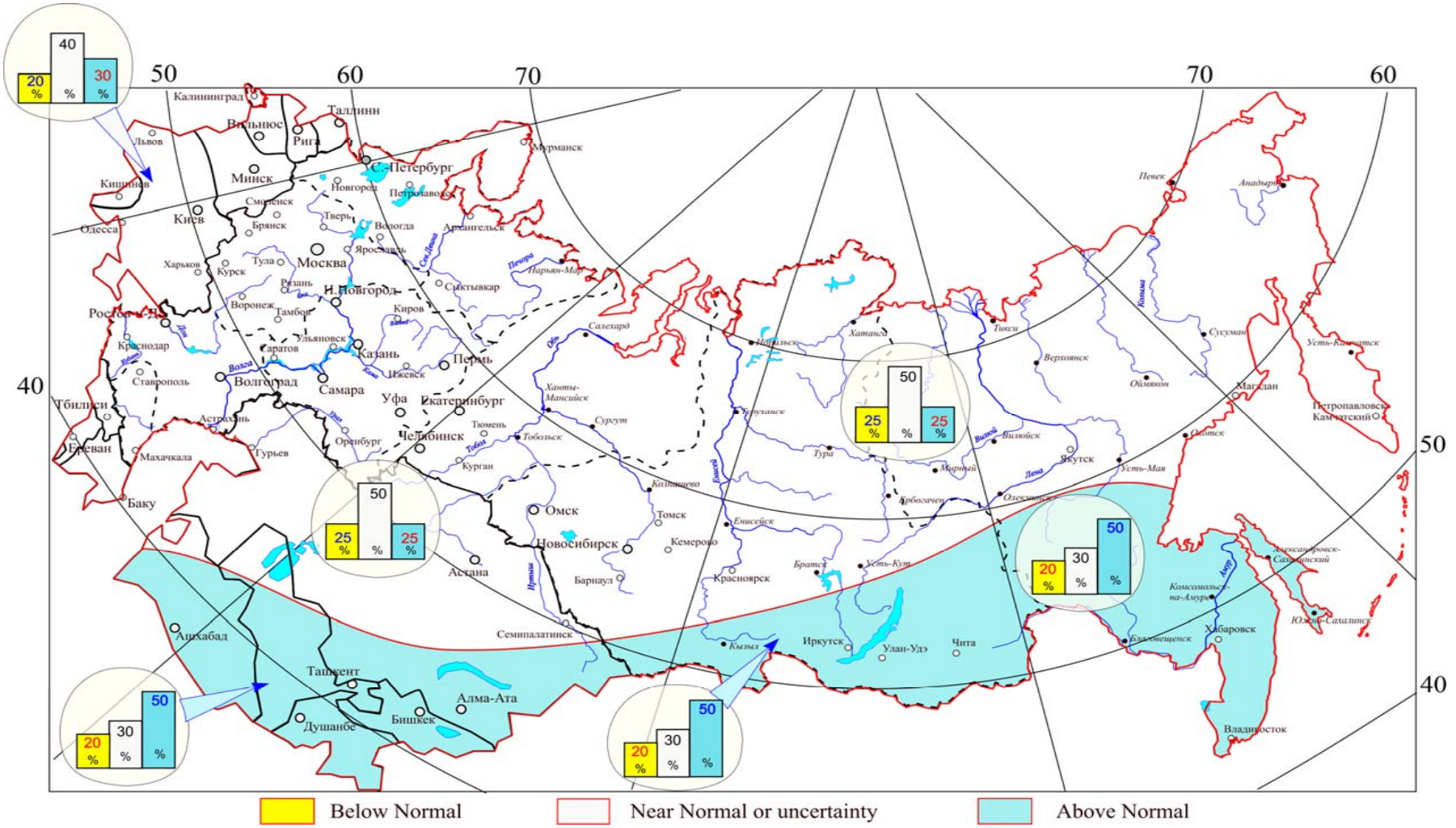
- *The Bulletin information is of advisory character and must be applied to particular regions taking into account the predictability of meteorological processes, regional climate, and quality of state-of-the-art atmosphere and ocean general circulation models.*

GRAFICAL PRESENTATION OF THE WINTER 2015-2016 TEMPERATURE OUTLOOK



http://neacc.meteoinfo.ru

GRAFICAL PRESENTATION OF THE WINTER 2015-2016 PRECIPITATION OUTLOOK



http://neacc.meteoinfo.ru