RCOF Review 2017

[NEACOF]

Status Report (Survey)

Annotated Outline

Specific Climate features of concerned region

*I*n North Eurasian region, wintertime temperature is mainly a result from interplay of advection of the warm and wet air from the North Atlantic and advection of cold and dry air from the Arctic and Siberia. The intensity and expansion of Siberian High and blockings are also peculiarities to consider.

Summer temperature and precipitation are strongly affected by circulation too, with the main role playing by meridional circulation features and blockings.

The direct links to the El Niño Southern Oscillation (ENSO) or any other well predictable tropical phenomena are negligible (Kulikova et al. 2015). Such dependence upon extra-tropical circulation suggests rather weak predictability of the seasonal climate over the North Eurasia by numerical models (Kiktev et al. 2015). Indeed, multi-model seasonal predictions for the North Eurasia issued by the World Meteorological Organization Lead Centre for Long-Range Forecast Multi-Model Ensemble (WMO LC LRFMME) or Asia-Pacific Economic Cooperation Climate Center (APCC) are usually very close to climatology which stem from the large spread of the individual model forecasts. So that, empirical statistical methods of seasonal predictions are widely applied in the region.

The North Eurasia is exposed to high levels of risks from climate extremes, such as cold waves in winter and heat waves mainly associated with heat waves droughts in summer.

Kiktev D.B., Kruglova E.N., Kulikova I.A. Large-scale modes of atmospheric variability. Part 1. Statistical analysis and hydrodynamic modeling, - Meteorology and Hydrology, 2015, №3, 5-22.

Kulikova I.A., Kruglova E.N., Kiktev D.B. Large-scale modes of atmospheric variability. Part 2. Their influence on the spatial distribution of temperature and precipitation in Northern Eurasia, - Meteorology and Hydrology, 2015, №4, 5-16.

The seasonal forecast is in interest for efficient use in different socio-economy sectors such as agriculture, construction, emergency situations agency, energy, transportation, health etc. First of all, climate information and seasonal forecasts play important role for agricultural sector. This information is in high demand to estimate the probability of draught and wet conditions over agricultural areas of CIS territory allowing to access the state of main crops cultivated on the CIS territory and take appropriate decisions.

For energy supply systems, seasonal forecasts especially are in high demand for the cold period (from September through April). Seasonal forecasts successfully used to estimate natural gas/coal consumption to operate electricity and heating systems.

Forecast information is used to be more proactive in anticipating significant possible emergency activity. Seasonal forecast information is taken in account for strategic planning in financial and human resource needs; increase the technical effectiveness of emergency protection work; improve monitoring of emergency situation.

This seasonal forecast information is used during the fire risk period (April through October) to outline an operational plan for the protection of resources from wildfire in different regions of CIS countries; to assess preparedness levels, fire situation, resources for fire management personnel, incident managers, firefighters and support staff; support resource allocation decisions.

The RCOF background

Since 2011, the North Eurasian Climate Outlook Forum (NEACOF), with the coordination of the Russian Federation, has been established within the North EurAsia Climate Center (NEACC), designated WMO Regional Climate Center (RCC) Moscow, to support the sustainable development in the Commonwealth Independent States (CIS) region.

The NEACOF brings together Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Russian Federation, Tajikistan, Ukraine and Uzbekistan.

Since 2012, the NEACOF has been conducted twice a year at the end of the springtime in May on the base of Internet resources and at the end of the autumn in November (physical sessions) with focus on the seasonal prediction for summer and winter respectively.

Twelve session of NEACOF (physical and internet based) were organized for period from the beginning.

The next 13th session will be at the end of November of 2017 in Moscow.

The RCOF process

The objective of the NEACOF is to bring together the climate experts from National Meteorological and Hydrological Services (NMHSs) of Commonwealth Independent States (CIS) countries, representatives from scientific, operational, and educational organizations, specialists of the climate services provision and end-users from socio-economic sectors. As a result of NEACOF sessions the consensus seasonal forecast is developed for upcoming season. GPC-LRFs are accessed and used for preparing the seasonal forecasts. The empirical forecast information is taken in consideration as well.

The NEACOF program usually contains the issues as follows:

-overview of the current state and progress in long-range forecasting approaches and climate variability investigations;

-the outlook of coming winter forecasts, state of large-scale circulation pattern as indicators to the upcoming winter conditions;

-training meeting focused on demonstration of new tools developed in NEACOF to analyze and interpret prognostic information;

-practices of the application of climate information to different socio-economy sectors;

-development of consensus seasonal forecasts.

Evaluation of the NEACOF products

It is very important to provide timely information about quality of long-range forecasts of the NEACOF to users to help them make a decision on how forecast information can be used for practical tasks. The NEACC/NEACOF forecast products have been regularly evaluated using standard statistical criterions recommended by guidance "WMO Standardized Verification System for Long-Range Forecasts". Calculated skill scores for deterministic and probabilistic forecasts are placed on http://neacc.meteoinfo.ru/verificationforecast. Special methodology has been developed to assess the subjective consensus forecast maps.

Capacity needs

The main capacity needs of the NMHSs are related to analysis and interpretation of the GPCs products. The NEACOF program during physical sessions includes training component focusing on long-range technology issues. The major stakeholders are interested in developing sector oriented specialized models with input of climate information. Results of successful interdisciplinary collaboration are presented during NEACOF sessions.

User involvement

The main contributors to the NEACOF are the Hydrometeorological Research Centre of Russia and the Main Geophysical Observatory (numerical and statistical forecasts), Institute of Global Climate and Ecology (climate monitoring), the Research Institute of Agricultural Meteorology (monitoring of droughts) and the Research Institute of Hydrometeorological Information (data provision).

The key participants of the forum are the climate experts from National Meteorological and Hydrological Services (NMHSs) of CIS countries (monitoring and statistical forecasts), specialists of the climate services provision, university researchers, and members of Regional

Association VI (RA VI) RCC-Network. Representatives from the agricultural sector, energy sector, water resources and medical service sometime participate in the forum as well.

According to the responses to the questionnaire issued by NEACC, all NHMSs within the NEACOF region support the enhancement of exchange of both diagnostic and operational climate

information. The scope of NHMS climate services in the area of NEACC differ from country to country. Some of NHMSs monitor and assess regional climate variability, while some deal with operational climate forecasting. In some cases, climate services are not enough transparent. So, the use of information from consensus NEACOF outlook is in importance for the NHMS needs.

WOT analysis

The positive feedbacks about NEACOF consensus products were received from NHMSs of Tadjikistan in 2016. The timely forecast information over Central Asia region from consensus statement was successfully used by government body and stakeholders in Tajikistan in support of decision making system. The main weakness of NEACOF is sustainability of organization of physical sessions and attendance of NHMSs. The long-term project to support of NEACOF process is needed.

Sustainability of RCOF

NEACC/NEACOF the principal regional entity which is responsible for climate services support in CIS countries. Their role has been recognized by NHMSs in the area of responsibility.

Existing coordination mechanisms is a communication with NHMSs focal points through e-mails.

Existing funding mechanisms:

Partial Roshydromet funding to sustain NEACOF

Partial Hydrometcenter of Russia support

Grant from Russian Foundation for Basic Research to cover interpretation expenses and overheads

Support of Regional Hydrological Center of Central Asia through World Bank to cover the attendance of NEACOF participants from CA (unfortunately project ended this year)

Way forward

Research and development activity of the NEACC is mainly directed on the development and improvement of the regionally oriented applications for the CIS countries based on a downscaling from global model forecasts. These regional forecasts should become the main basis for the NEACOF consensus outlooks. Research activity also is aimed to development of sector specific models based on climate forecast information. Specialists from NHMSs are interested in knowledge transfer of methodology of sector oriented models.

Special attention has been paid to coordination and organization of the training and capacity building activity focused on end-users within NMHS members of the CIS Intergovernmental Council for Hydrometeorology.

The technology of issue of Climate Watch Advisory was recently developed at NEACC. The information about monitoring of extreme climate events will be presented during the NEACOF session.