**ICRC-CORDEX 2019 International Conference On Regional Climate**

**Session: B3**
**Theme: Atmosphere-land**
**Day and time: Wednesday, 16th October, 15:00-16:00**
**Chair: William Gutowski**
**Rapporteur: Mohan Kumar Das**

## Evaluation of the Mediterranean climate and marine biogeochemistry with Regional Earth System Model RegCM-ES

Dr. Marco Reale nicely presented in the session. His wisdom and deep knowledge appeared in the question/answer interaction session.

In the study they have evaluated the skills of a new version of the Regional Earth System model RegCM.4.6.1/CLM.4.5 in reproducing the climate and the marine biogeochemistry of the Mediterranean region. The importance of the study is to focus the high populated area along the coastline which is sensitive to extreme events and an important hot-spot climate variability.

In the study it is found that the new version of the model first time tested over the Mediterranean hotspot area. The errors in the rainfall, evaporation are minimized compare to the previous version of the model. The analysis showed good skill in reproducing net primary production of chorophyll-a and dissolved nutrients. The novel aspects of this coupled system include a new version of the atmospheric module RegCM ES and the marine biogeochemical model, BFM, online coupled to the ocean circulation model MITgcm. The future aspect of the study is to simulation of river load of $NO_3$ using the carbon-nitrogen package included in the CLM 4.5 version. The use of

high resolution ChyM river model for the simulation of the river discharge and the settings of $O_2$/$CO_2$exchanges between atmosphere and ocean.

The session was very interactive. Many questions, suggestion and recommendations are given. These are related to spin up issue of the model, model domain resolution, parameterization issue, different depth of the ocean, bias in the nutrients, identification of redundant output, enhance the performance of the model, vertical mixing, Application in the fisheries aspect, field campaign.

**Keywords.** RegCM-ES, Mediterranean region, Chlorophyll-a, Net primary production, Dissolved nutrients, Dissolved oxygen, vertical mixing, sensitivity analysis

**Poster presentation:** B3-P-01: **Assessment on the variability in optical and radiative effects of key aerosol types over IGP and NCP regions: Temporal heterogeneity and source identification**

Ms. Rehana Khan presented the poster which focused on the radiative forcing due to aerosols which is a key parameter in quantifying their crucial impacts on climate change. An increase(decrease) in SSA with wavelength was observed during JJA (SON) which is attributed to the presence of fine-mode(coarse dust) particles.

The main findings of the study is the atmospheric aerosols in Southeast Asia have different sources and the distribution largely effected by the meteorological conditions i.e. wind, rainfall and dry seasons. The climate effects of BCD types aerosols on the radiative forcing efficiency of heating rate exhibits distinctive annual and seasonal

features. The complexity and types of aerosols and their sources persisted over the region with reasonable consistency among the different method based ground data. The results will be further used to assess and quantify their radiative implications over the study regions. It is revealed that the higher atmospheric forcing was observed for MAB aerosol type at Beijing followed by POD type in Lahore, Karachi and Sacol along with the corresponding higher atmospheric heating rates.

**Keywords.** AERONET, South Asia, Aerosol types, Optical and radiative effects, Multivariate statistical analysis.