H51V-1821 - ANALYSIS OF COHERENCE OF GRIDDED PRECIPITATION AND TEMPERATURE DATASET IN THE ALPINE REGION

Friday, 13 December 2019

08:00 - 12:20

Moscone South - Poster Hall

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Abstract

Large scale hydrological modeling has gained a wealth of attention in the last decades, due to the importance of assessing the growing anthropogenic and climate change impacts on water resources. In the context of these studies the European Alpine region assumes a relevant role, given the complex combination of anthropogenic and climatic drivers influencing the hydrology of this important region, which is considered the water tower of Europe. The application of hydrological modeling at synoptic scale requires an accurate assessment of the climatic forcing, chiefly precipitation and temperature. To support large scale analysis a number of gridded products, providing precipitation and temperature over a regular grid are available. However, these products are often not specifically derived for hydrological applications and uses data with different levels of accuracy and resolution, from traditional ground based measurements, to satellite data. In this context, assessing the uncertainty due to the climatic forcing becomes crucial in order to gain confidence in the simulations. In the present study, we evaluate the role of temperature and precipitation in the simulation of river streamflow in the Italian portion of the Alpine region having a total area of 120000 km^2. Given the extension of the area, most applications uses gridded products which provide precipitation and temperature over a uniform grid. The simulations have been conducted by feeding HYPERSTREAM-HS, a distributed hydrological model specifically tailored for large-scale simulations, with the following gridded meteorological dataset: MESAN, COSMO reanalysis, APGD, MSWEP, E-OBS. Accuracy was evaluated by means of the Nash-Sutcliffe efficiency index. The objective of the simulation is to identify biases and systematic errors in the gridded products that may lead to biased streamflow simulations. A preliminary analysis performed with COSMO produced NS values in the range of 0.4 - 0.77, therefore suggesting that COSMO is reliable enough to perform hydrological simulations in the Alpine region.

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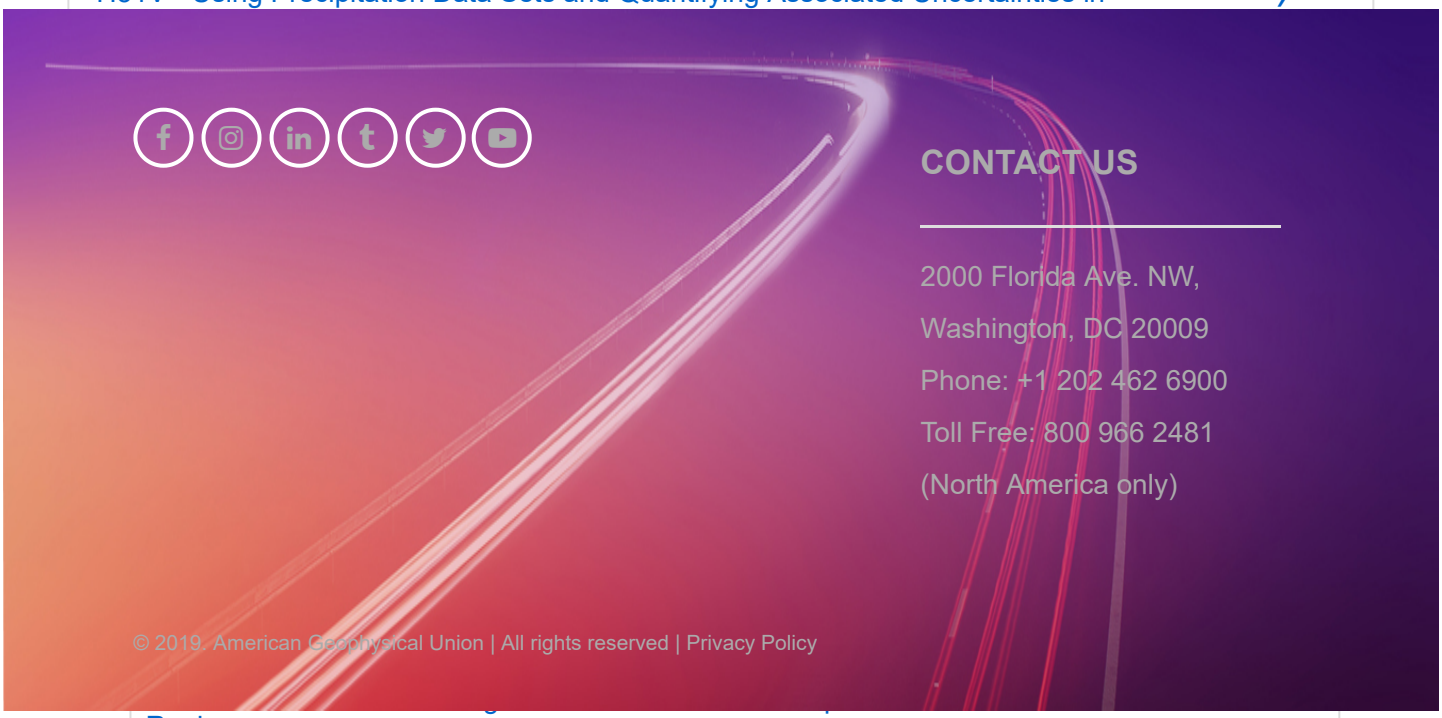

Region

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