[EE] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-AS Atmospheric Sciences, Meteorology & Atmospheric Environment

[A-AS05]Precipitation Extreme

convener:Akiyo Yatagai(Hirosaki University)

Wed. May 23, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)

Predicting future hydro-meteorological conditions due to human-induced climate change is a major concern. In particular, the change of extreme events are focused by the international scientific and political frameworks, such as WCRP and IPCC. Especially, heavy precipitation often induces disasters such as flood and landslides, and drought is often linked to food crisis. Japanese science community has lead establishment of a dense network of rain-gauge observation such as AMeDAS and developing accurate grid precipitation data over Asia such as APHRODITE as well as high-resolution climate modeling and satellite precipitation estimates. Facing the urgent task of evaluating, forecasting precipitation extremes and mitigating consequence disasters, there seems to be some gaps between the communities. Hence, we propose a session with focusing on extreme precipitation to assemble scientists of tacking this issue with different methods. We also welcome topics on evaluating related meteorological parameters such as snowfall and temperature and studying disasters which are related to extreme precipitation (e.g. typhoon, landslides and drought).

[AAS05-P01]"New Climate" Warmed, "New Atmospheric Circulation" and "Extreme" Precipitation in Morocco

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Cumulating ocean-atmospheric thermal energy caused by global warming has resulted in the reversal of the energy balance towards the poles. This situation is characterized by a new ocean-continental thermal distribution: over the ocean, the balance is more in excess than in the mainland, if not the opposite when the balance is negative inland.

Thanks to satellite observation and daily monitoring of meteorological conditions for more than ten years, we have observed that the positive balance has shifted more towards the poles, mainly in the northern hemisphere. Subtropical anticyclones are strengthened and have extended to high latitudes, especially over the Atlantic and Pacific oceans. This situation creates global peaks strengthened in winter periods, and imposes on cosmic cold the deep advection toward the south under the form of planetary valleys "Polar Vortex".

This situation imposes on the jet stream a pronounced ripple and installs a Meridian Atmospheric Circulation (MAC) in winter, which brings the warm tropical air masses to reach the Arctic Circle, and cold polar air masses to reach North Africa and Florida.

This situation creates unusual atmospheric events, characterized by hydrothermal "extreme" conditions: excessive heat at high latitudes, accompanied by heavy rains and floods, as well as cold at low latitudes and the appearance of snow in the Sahara!

The populations are profoundly influenced by the new phenomena. The socioeconomic infrastructures can no longer assume their basic functions and man when unprotected is weak and hence the advanced vulnerability of all the regions especially those belonging to poor and developing countries

Recent studies have shown that global and regional climate system is affected by extreme events of El Niño. Statistical and dynamic links have been confirmed in Northern Africa and Morocco; hence the importance of the fall situation and winter 2015-2016.
These conditions are the consequences of the "New Climate" warmed, strengthened by the strong El Niño event in 2015 decennial.
These are the characteristics of "New Meteorological Events" resulting from the "New Atmospheric Circulation", caused by the "New planetary Climate" forcing by El Niño event, consequence of "Global Warming".