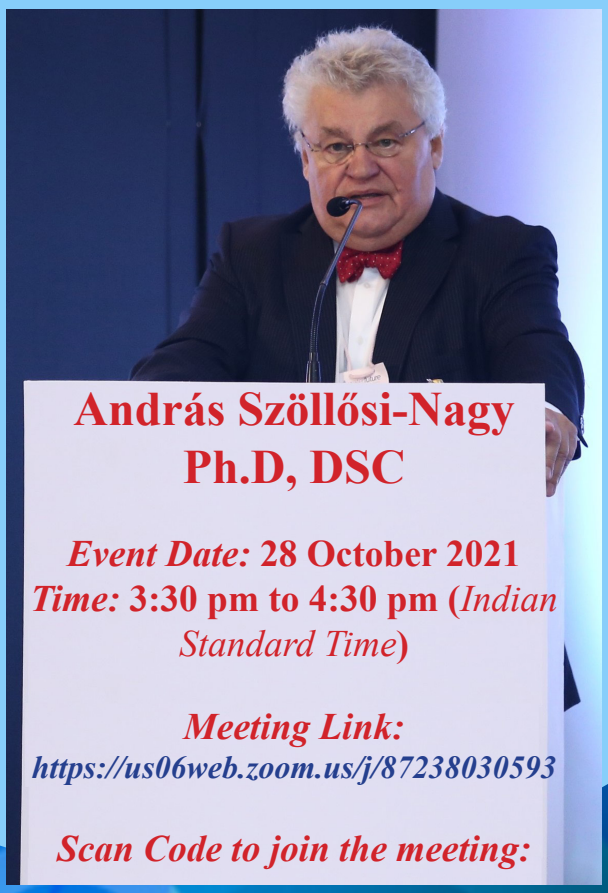
Webinar
Divecha Centre for Climate Change, IISc

17th JEREMY GRANTHAM LECTURE ON CLIMATE CHANGE

Climate Change and the Increasing Frequency of Hydrological Extremes



András Szöllősi-Nagy
Ph.D, DSC

Event Date: **28 October 2021**
Time: **3:30 pm to 4:30 pm** (*Indian Standard Time*)

Meeting Link:
https://us06web.zoom.us/j/87238030593

Scan Code to join the meeting:

There is growing empirical evidence that the length of the return periods of extreme hydrological events, such as floods and droughts, is decreasing. In other words, the inverse of the return period, i.e. the frequency, or the probability of extreme events, is increasing yielding more frequent disasters at both ends of the hydrological spectrum. Recent flood disasters in Germany, US and several other places are sending strong messages in this regard. Furthermore, it is observed that, for instance, the 100-year flood occurs nowadays at every 20 years or so in many parts of the world. How is it possible when the amount of freshwater globally is the same as it was at the beginning of the Holocene? What caused the change in the hydrological cycle that seems to accelerate or intensify? Some argue that it is basically due to the large planetary cycles, such as the Milankovitch-cycle. That important cycle describes the collective effects of changes in the Earth's movements on its climate over thousands of years. However, the acceleration of the hydrological cycle has been observed quite recently at a decadal time scale, which is by orders of magnitude much smaller when compared to geological time scales. The hypothesis that is being tested, and has already yielded quite important affirmative answers, is that the intensification of the hydrological cycle is due to anthropogenic changes observable since the industrial revolution. New design methodologies and standards are needed to properly take into account the non-stationarity of hydrological processes as the current design methodologies, such as the concept of T-year design floods, developed under the hypothesis of stationary hydrological processes, is not valid anymore. Mitigation and adaptation measures will shortly be outlined. Of the latter, water related structural and non-structural measures will be reviewed. It is argued that the re-examination of some of the structural measures, such as the need for more water storage, is necessary at all scales.

Organized by:
Divecha Centre for Climate Change, IISc