

## International Conference on Climate Change and Disaster Management (13CDM)

### Specific Suggestions and Recommendations

Studies unequivocally show that Climate Change is real. Extreme weather events, including intensities of cyclones and probability of heat waves, are on the increase. Imprints of the changing climate are felt in the Indian summer monsoon dynamics.

However, while estimating the magnitude of past climate change, it is essential to remove long-period oscillations (including the 30-year and other periodic variations which are clearly manifested in precipitation).

It is also felt that the future climate simulations should also include the potential impacts in the middle atmosphere. Uncertainties in the future climate projections through models are quite large. This factor should be considered adequately. In order to reduce uncertainties in climate assessment and prediction, the following aspects are recommended.

1. At present, well calibrated observations of all climate variables are highly limited to certain geographical regions. Substantial in-homogeneity exists in the geographical locations of these stations. This area should be considerably strengthened, especially with the inclusion of all essential climate variables and their altitude profiling (where ever applicable) at more geographical regions.
2. Satellite observations do provide a solution to the above problem to a good extent. However, there are several areas in satellite remote sensing that require strengthening, including global measurements of:
  - a. wind profiles in the troposphere
  - b. 3-dimensional distribution of water vapour and other greenhouse gases
3. Details of some of the upcoming missions for satellite remote sensing of aerosols (using UA satellite) and greenhouse gases CO<sub>2</sub>, CH<sub>4</sub>, and CO (using Geocarb) were presented in the conference. These advancements will certainly improve the measurements of aerosols and greenhouse gases. However, more of similar missions with adequate global coverage with high spatial and temporal resolutions should be ensured.
4. Measurement of black carbon (BC) from satellite sensors, with sufficient accuracy, is yet to be made. This area requires further strengthening.
5. Assessment of the effect of black carbon requires improvements in the inventories. The effect of BC emitted by different sources (e.g., biomass, vehicle exhaust) is found to be different. This requires detailed mapping and investigations on the BC sources.
6. Importance of blending Satellite remote sensing data with ground based observations is essential to increase utility of these data.
7. One of the most important requirements is the improved sampling of space-borne observations of water vapour profiling using microwave radiometers. Studies clearly show that the model forecasts get substantially improved by the assimilation of this data. However, the spatio-temporal sampling of these measurements is not adequate at present and needs to be improved. Further, the continuity of such missions for global 3-dimensional distribution of water vapour should be ensured.
8. Constellation of satellites to measure optimum number of parameters almost simultaneously should be further strengthened.
9. Small satellites have demonstrated their large potential for Earth observations with high cost-benefit ratio, and should be further explored.
10. Framework for analysing satellite data for geophysical parameters and disaster analysis should be formulated.
11. Exchange of satellite data through open access for climate studies and disaster management should be encouraged.