

18.10.2016

## **Day-2\_Report of Group 4 : Forecasting, Applications and Market.**

We have been able to gain much knowledge on the causes of sea level change through the lecture presented by Dr. Nilsen on the Physics of Sea level variations. The main contributions to relative sea level rise include the mass exchange, thermal expansion, weather effects and a vertical land motion. As land ice melt, gravity is reduced, drifting away the sea water from the coast. This in turn, causes the solid earth to rise, which affects the relative sea level. The lecture given by Prof Ola Johannessen, on the sea level variations in the Indian Ocean highlighted the risk of coastal flooding and erosion due to the frequency and intensity of severe storms enhanced by climate change.

The Global Sea Level Rise at present is about 3 mm per year, caused primarily by the warming of the ocean and the melting of glaciers and ice sheets. The sea level along all Indian Ocean has increased since 1960, up to 2mm per year except for the fall at Zanzibar (Han, et al 2010, 2014). However, in future the Sea Level Rise will be more influenced by the projected melting of the Greenland Ice Sheet and glaciers. Over the last few years the melting of the Greenland Ice Sheet will contribute about 1 mm per year of the total of global increase of 3 mm per year, but Greenland Ice Sheets contribution will potentially be larger in the future.

From Earth system models (IPCC) we have for example estimated that at the end of this Century, the Sea Level Rise along the coast of Kerala in the South Western part of India using the RCP 4.5 scenario will potentially be 0.55 m where the ocean warming will contribute 42%, melting of ice sheets 35%, melting of glaciers 27% and isostatic adjustments -4%. Using the RCP 8.5 scenario the Sea Level Rise is only slightly larger, 0.60 m.