Climate change poses an extremely wide-ranging set of risks. Quantifying and aggregating these climate impacts in a meaningful way is extremely challenging, owing to the complex uncertainty that pervades the coupled human-Earth system. The long time horizon of the problem with temporal dynamics such as thermal inertia and other lags, and the heterogeneous nature of climate makes impacts across regions, sectors and generations. Under the Paris Agreement 195 nations made pledges known as nationally determined contributions (NDCs) which indicate how the national governments are evaluating climate risk and policy opportunities. Because the ocean plays critical roles in climate mitigation and adaptation it is necessary to look into the oceans in detail.

Ocean warming, acidification, de-oxygenation, and the change in primary productivity are considered the four main climate change stressors of marine ecosystems, and occur simultaneously, creating high risk for synergistic impacts.  Coral reefs, mangroves, sea level, coastal erosion and the inundation of coastal plains are the other impacts. The Paris Agreement commits nations to limit global temperature rise to well below 2oC, while pursuing efforts to limit to 1.5oC.  Oceans are not only becoming more prominent in climate negotiations, but countries are actively including marine ecosystems in their national climate plans. This talk looks at the changes that are happening the oceans, especially in the Indian Ocean, and the visible impacts that might have on the weather and climate, and hence the socio-economy of the region.