Increasing severity of thunderstorms and cyclones: Environmental and socio-economic impacts in India

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Millions of poor with low adaptive capacity living in climate sensitive regions and an economy closely tied to climate sensitive natural resource base make India highly vulnerable to the impacts of climate extremes. Climate related disasters kill hundreds every year. Associated with rising temperature, significant increasing impacts are observed in case of cyclones, thunderstorms, lightning and floods. There is an increasing tendency of thunderstorm development in the Western Ghats region where the squalls cause widespread damage to agriculture, houses and forest. Lightning, flash floods and landslides cause casualties frequently. Heavy rain from the convective clouds erodes topsoil, threatening biodiversity. The thickly populated coastal zones, especially cities suffer from the increasing intensity and frequency of tropical storms. In addition to structural damages, surges during high tides paralyse coastal urban life, as the floodwater obstructs drainages. Surges contaminate water resources far inland. Strong winds affect the coastal circulation, upwelling and SST. Falling fish catch in the southern coast is linked to this. Impact of storms is noted even in coral environments. Impact on national economy also is large, as fisheries contribute significantly to overseas trade. Climate extremes are likely to retard the present economic growth, because of the massive investment required for adaptation, mitigation, post-hazard recovery and resettlement. Social issues like migration to safe location and competition for resources worsen. However, implementation of the policies and strategies including the coastal zone regulation act and of the measures for adaptation to climate change often fail because of various ecological, socio-economic, technical and political issues. A comprehensive assessment of the socio-economic and environmental impacts of increasing severity of thunderstorms and tropical storms in India, and of the current strategies and polices to face such challenges is made in this study. Suggestions for the improvement of the climate policy and adaptation strategy have been provided.