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Synoptic Patterns Related to Summer Monsoon Floods on the Mumbai Region

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The Indian Western Coast is a relatively narrow strip (width generally lower than 100 km) bounded to the West by the North Indian Ocean and to the East by the Western Ghats mountain range. During the South Asia Monsoon (SAM) season, conventionally defined between June 1 and September 30, this part of India is one of the most highly affected by extreme rainfall events, with a cumulative rainfall height that may exceed 4000 mm. The combination of quite short and steep rivers and high intensity precipitation events makes this area particularly prone to flash floods. This study focuses on the Mumbai Region, because of its huge number of inhabitants (around 20 millions people) and its great economic importance for India. To provide a tool for damage-causing floods' forecast in the selected area, extreme rainfall events were analyzed and antecedent synoptic patterns were detected. First results show a pretty clear signal for either SLP and SST on the Arabian Sea, while horizontal winds have different (but still precise) patterns depending on the altitude. Ongoing more detailed analyses are supposed to refine these early upshots.