

National Aeronautics and Space Administration Jet Propulsion Laboratory California Institute of Technology Modulation of the Ganges-Brahmaputra river plume by the Indian Ocean Dipole and eddies inferred from satellite observations (Séverine Fournier)



*Figure:* SMAP SSS for October and November in 2015 (*c*, *e*) and 2016 (*d*, *f*). Monthly AVISO currents are represented on top. Thick arrows highlight eddies.

**Science Question:** The Bay of Bengal (BoB) receives large amounts of freshwater from the Ganga-Brahmaputra (GB) river during the summer monsoon. The resulting upper-ocean freshening influences rainfall, cyclones, and biological productivity. In situ observations are too sparse to provide a systematic and routine monitoring of the spatio-temporal SSS variability.

**Data & Results:** SMAP along with altimetry data, provides unprecedented views of the GB freshwater plume transported by the East India Coastal Current (EICC) from intraseasonal to interannual timescales. Remote forcing associated with the negative Indian Ocean Dipole in the fall of 2016 caused a stronger EICC and GB plume that extended further south than that in 2015. Mesoscale eddies induced meandering in the EICC that helped exporting the freshwater plume away from the coast.

**Significance:** SMAP opens a new avenue to improve the understanding of BoB salinity balance, the contribution of horizontal salinity gradients to the EICC, the offshore freshwater transport by eddies, and the exchanges of freshwater between the BoB and saltier Arabian Sea.

Fournier S., Vialard J., Lengaigne M., Lee T., Gierach M., Chaitanya A.V.S. (2017). Modulation of the Ganges-Brahmaputra river plume by the Indian Ocean Dipole and eddies inferred from satellite observations. *Journal of Geophysical Research, in review*