Oceanic Feedback and Acceleration of Climate Variability

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Objectives:

Use long time series of wind/stress by QuikSCAT

1. to link regional climate changes into a global scenario
2. to study persistent atmospheric imprints by the ocean across ocean fronts
3. to study oceanic influence on global energy and water cycles
Ocean’s Influence on Water Balance of South America

\[
\frac{dM}{dt} = \int \Theta - R
\]

- **Red** - QuikSCAT moisture influx \( (\int \Theta) \)
- **Green** - GRACE rate of mass change \( (dM/dt) \)
- **Black** - Climatology river discharge \( (R) \)
- **Dashed Green** - \( \int \Theta - R \) and \( \int \Theta - dM/dt \)
\[
\frac{u - u_s}{u_*} = 2.5 \left( \ln \frac{z}{z_0} - \psi_u \right) = \frac{1}{\sqrt{C_D}}
\]
Evaporation (E), precipitation (P), and moisture advection (Θ) over ocean were independently derived from space. E-P and $\nabla \cdot \Theta$ show similar geographic patterns.