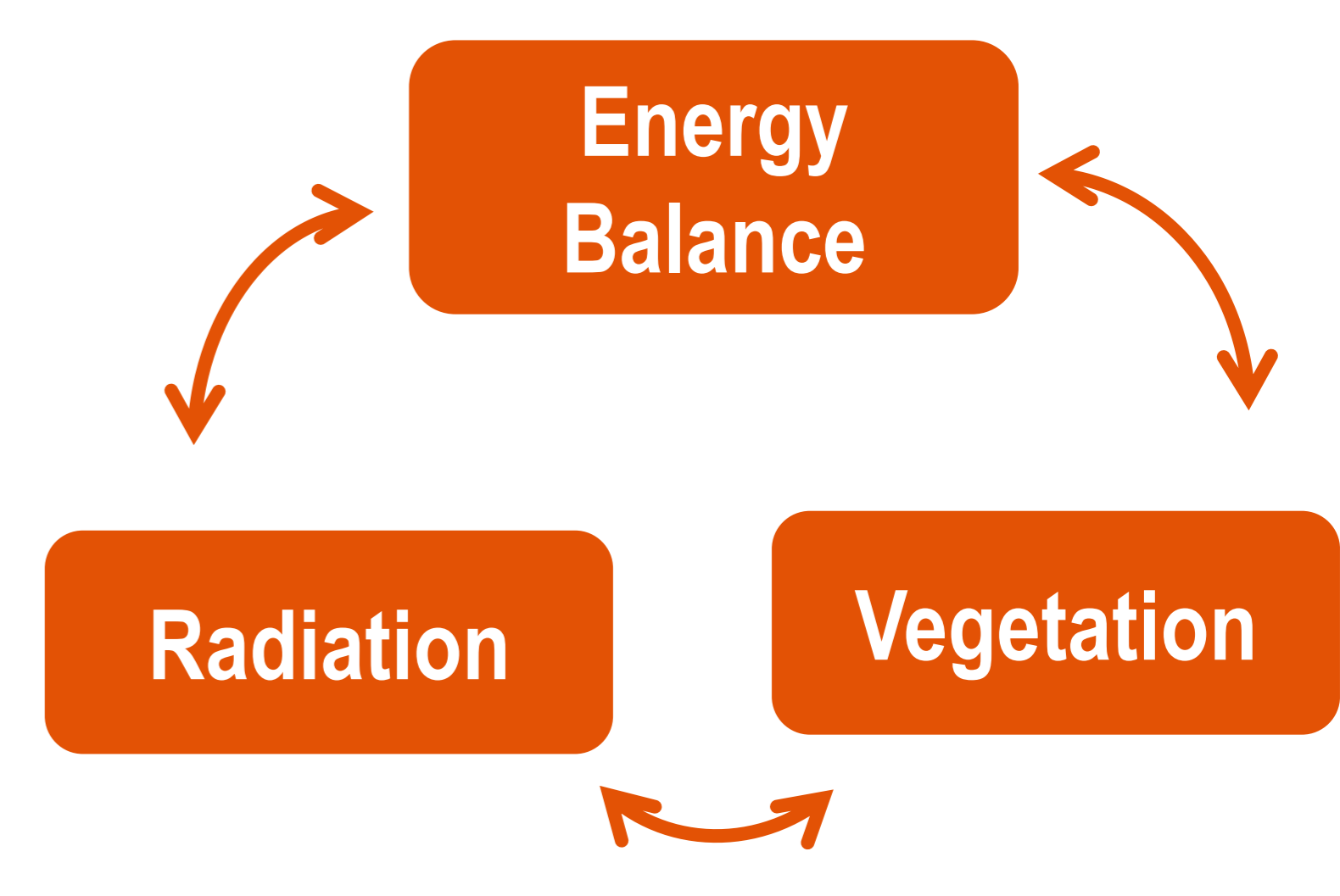


The LSA SAF Products and Services: Continuous Monitoring Vegetation & Drought



The LSA SAF explores EUMETSAT satellite observations to monitor land surfaces and improve our understanding of land surface processes.

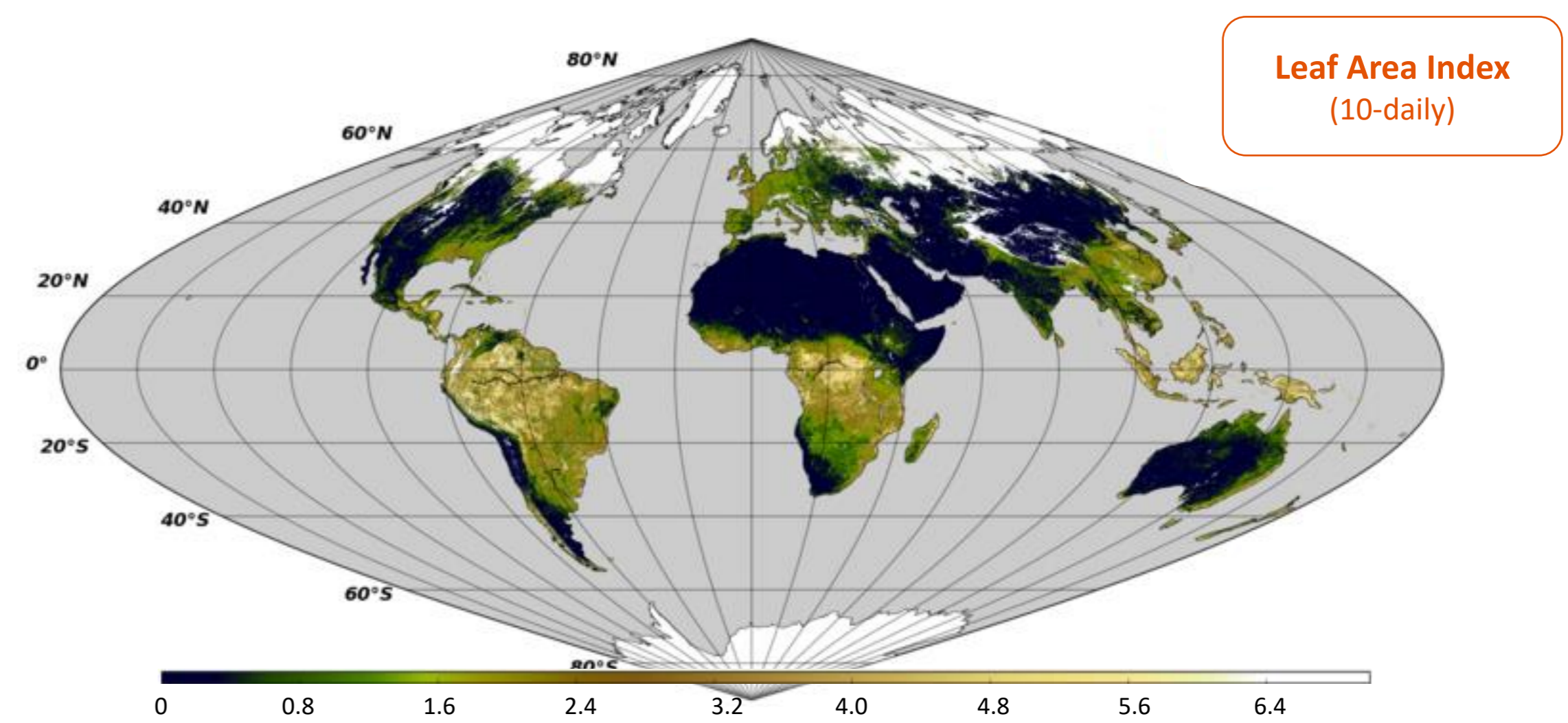
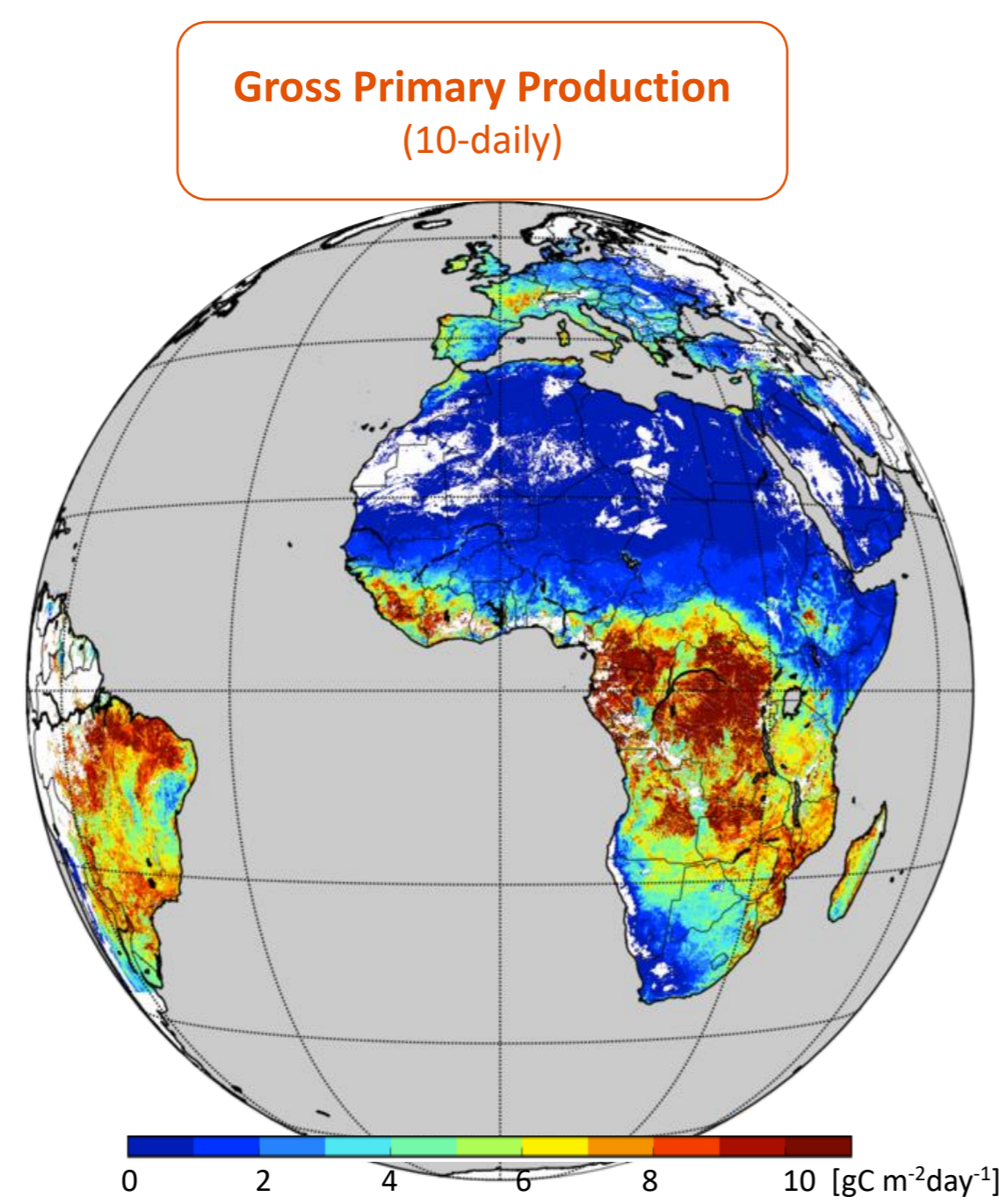
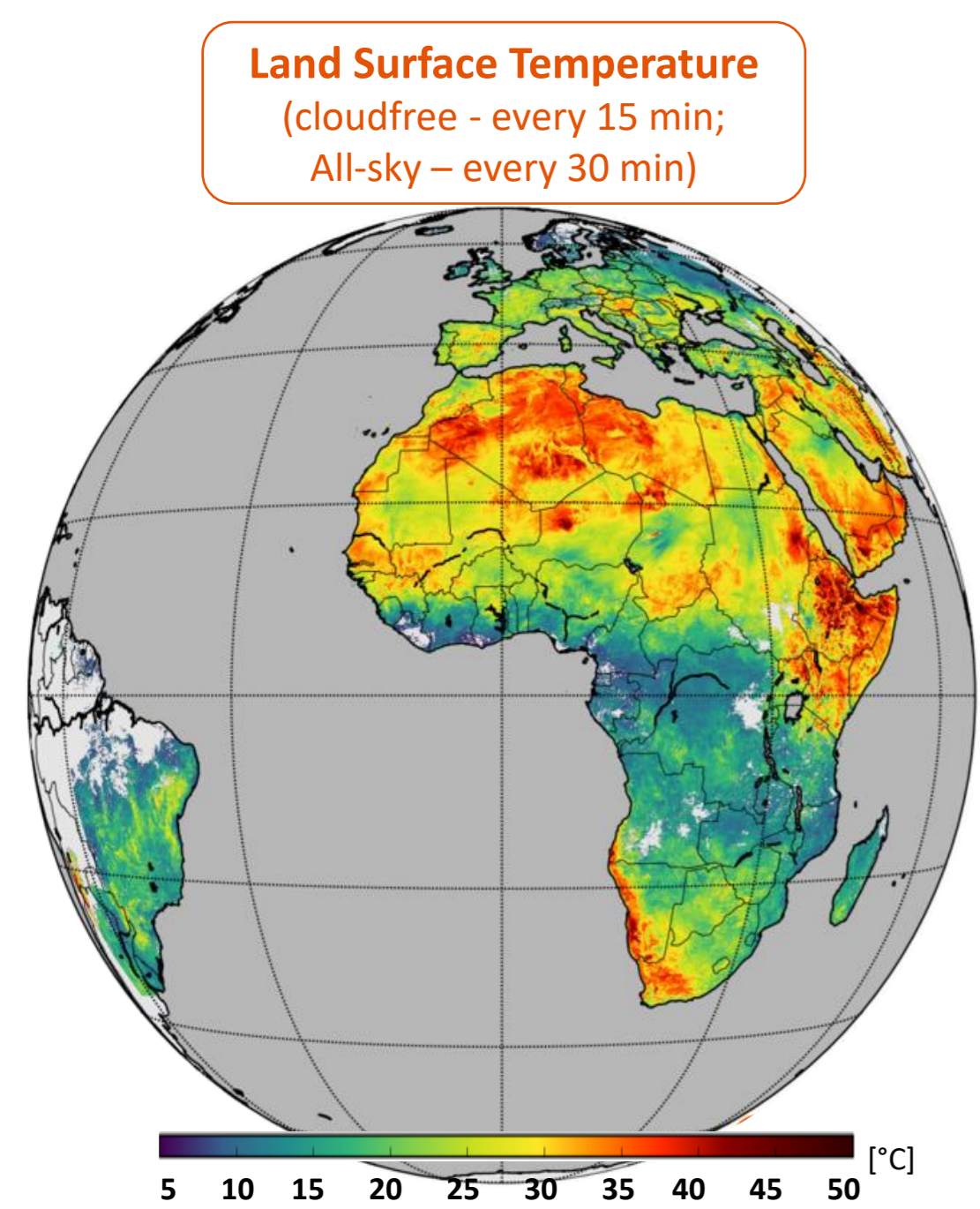


GEO (2004 – present)

- ✓ High frequency SEVIRI observations allow monitoring fast evolving variables – Land Surface Temperature, Radiation or Energy Fluxes, Fire Radiative Power – and provide robust estimates of slower evolving parameters - Albedo or Vegetation State (e.g., LAI).
- ✓ When combined, these variables provide information on exchanges of energy, between the surface and the atmosphere, in turn closely linked to water and carbon turbulent fluxes.

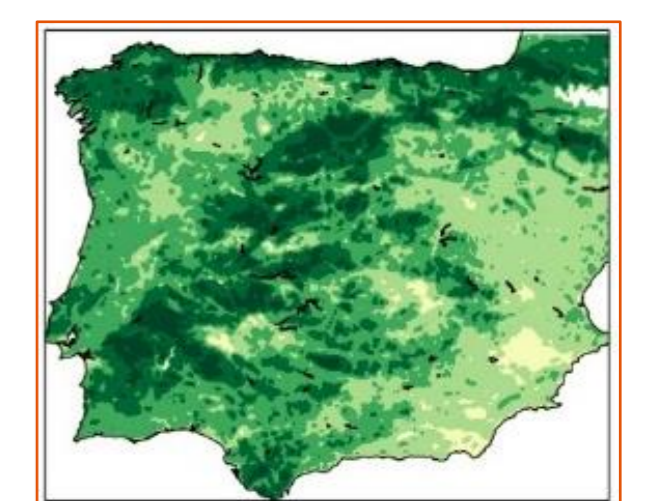
LEO (2007 – present)

- ✓ AVHRR/Metop provides Global coverage at c.a. 1km resolution: LST, Albedo and Vegetation State products. Set of variables will be extended with EPS-SG.

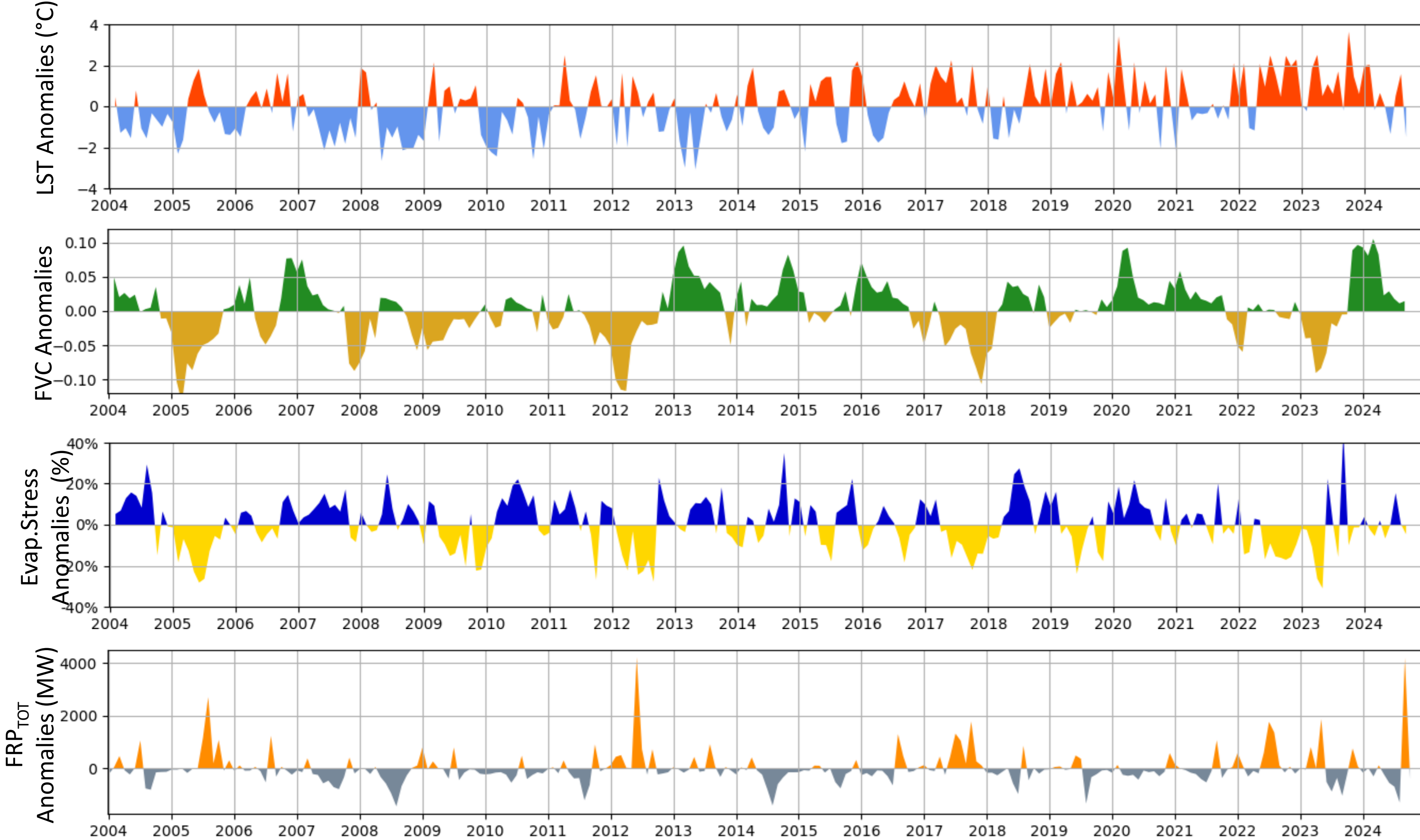


- ✓ All LSA SAF products bear direct or indirect signatures of Heat and Water Stress:

- Let's consider the **Iberian Peninsula** (9°W - 0°E; 36°N – 43.5°N), where temperature and precipitation present strong intra- and inter-annual variability, as a test-bed.



Temperature, Vegetation, Evaporative Stress and Wildfire Activity Co-Variability



LSA SAF SEVIRI Products – Iberian Peninsula

- Land Surface Temperature (LST) – monthly anomalies estimated from clear sky 15-min LST, averaged over the Region of Interest.
- Fraction of Vegetation Cover (FVC) – as above but using the LSA SAF 10-daily FVC.
- Evaporative Stress as the ratio of Actual (METv3) to Reference Evapotranspiration; anomalies w.r.t. to the expected monthly Evaporative Stress.
- Total monthly FRP normalized by number of fires; anomalies w.r.t. respective normals.
 - ▶ Strong co-variability;
 - ▶ Well-identified drought years (e.g., 2005, 2012, 2017).

- The diversity of links among LST, ET and vegetation variables follows the predominant evaporative regimes in Iberia:
 - ▶ Energy-limited in winter;
 - ▶ Water-limited during most of the year.

Intra-annual variability of LST, Vegetation, Evaporation (or Evaporative Stress) Links

