

# OHF : WP2 Status

## Reference Data Set Generation

- WP21 Gathering and archiving EO
- **WP22 Homogenization of turbulent flux data**
- WP23 Generate regional heat constraints for the cage study
- WP24 Make data available to project members through (preliminary) portal

# OHF : WP22 Status

| <i>Product</i>     | $W_{10}$ | $Q_a$ | SST | $T_a$ | $\tau$ | LHF | SHF | LW | SW | Period      | Spatial Resolution   | Temporal Resolution  | Format |
|--------------------|----------|-------|-----|-------|--------|-----|-----|----|----|-------------|----------------------|----------------------|--------|
| <b>IFREMER</b>     | X        | X     | X   | X     | X      | X   | X   |    |    | 1999 – 2009 | 0.25°×0.25°          | Daily                | NetCdf |
| <b>HOAPS</b>       | X        | X     | X   | X     |        | X   | X   | X  | X  | 1987 - 2008 | 0.5°×0.5°            | 6-hourly and Monthly | NetCdf |
| <b>OAFLux</b>      | X        | X     | X   | X     |        | X   | X   | X  | X  | 1985 - 2014 | 1°×1°                | Daily                | NetCdf |
| <b>SEAFLUX</b>     | X        | X     | X   | X     |        | X   | X   |    |    | 1998 - 2007 | 0.25°×0.25°          | 3-hourly             | Binary |
| <b>J-OFURO</b>     | X        | X     |     |       | X      | X   | X   |    |    | 1988 - 2008 | 1°×1°<br>0.25°×0.25° | Daily<br>Monthly     | NetCdf |
| <b>ERA Interim</b> | X        | X     | X   | X     | X      | X   | X   | X  | X  | 1992 - 2012 | 0.75°×0.75°          | 6-hourly             | Grib   |
| <b>CFSR</b>        | X        | X     | X   | X     | X      | X   | X   | X  | X  | 1992 - 2012 | 0.38°×0.38°          | 6-hourly             | Grib   |
| <b>MERA</b>        | X        | X     | X   | X     | X      | X   | X   | X  | X  | 1992 - 2012 |                      | 6-hourly             | Grib   |

## OHF : WP22 Status

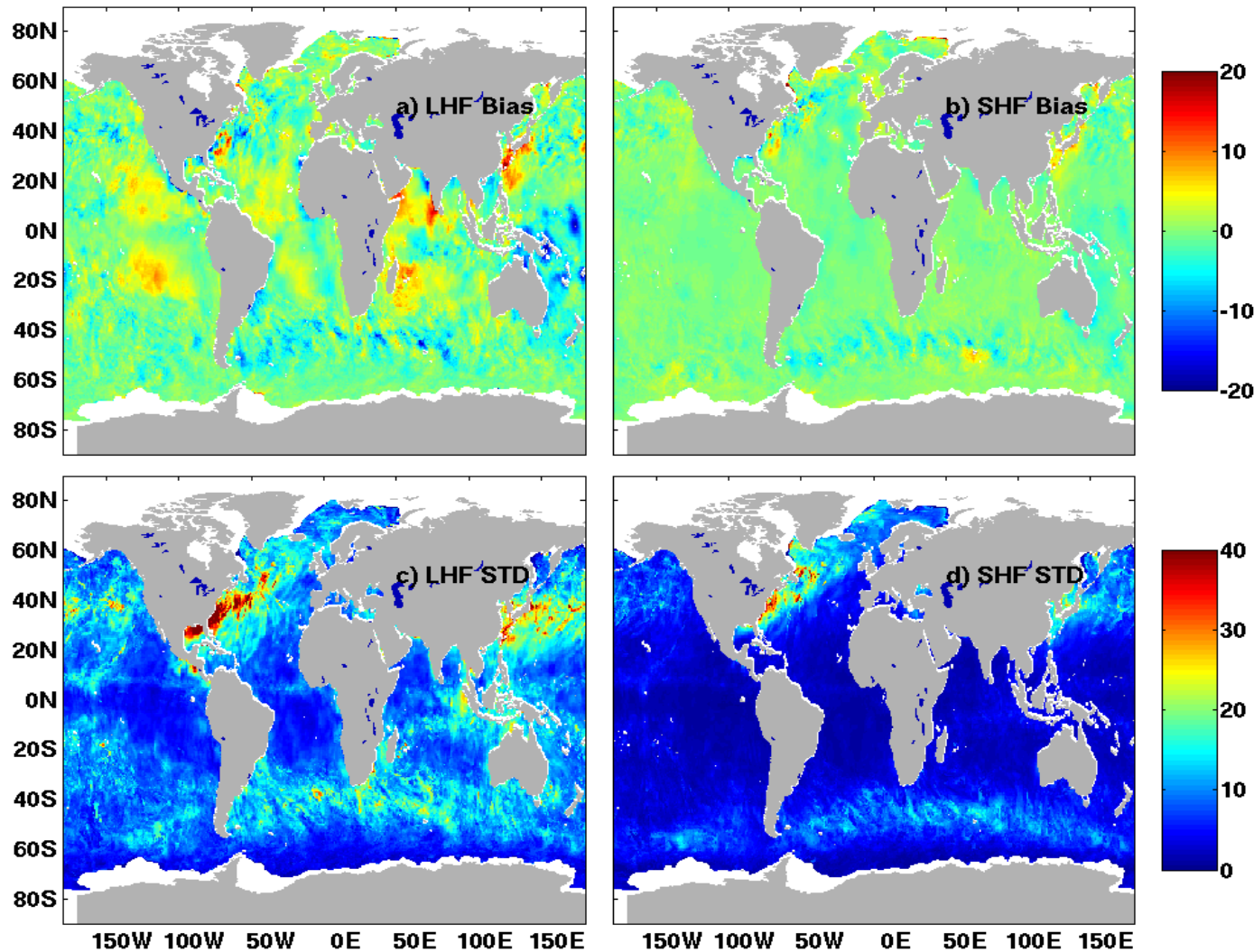
- The "homogenization" / standardization : estimation of each product data on same grid map over global oceans.
  - 0.25° in longitude and latitude
  - Daily
  - Global Oceans
  - Land/Ice mask
  - Format

### Issues

- HOAPS : 6-hourly Swath data
- SeaFlux : 3-hourly analyses
- ERA Interim: 6-hourly estimates

# Issue: Daily estimation of HOAPS fluxes

Figure 1 : Spatial distributions of the mean difference (top) and of the associated standard deviation (STD) (bottom) between “true” and “simulated” ERA Interim daily LHF and SHF calculated for January 2000.



## Spatial Resolution Issue

### 1<sup>st</sup> Method: Linear Spline

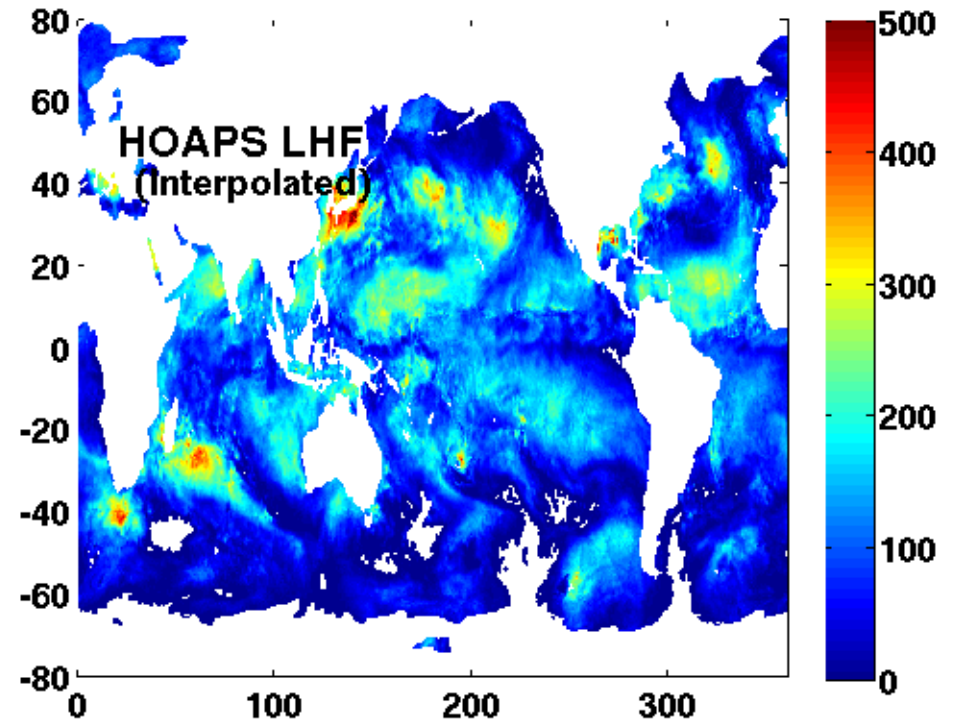
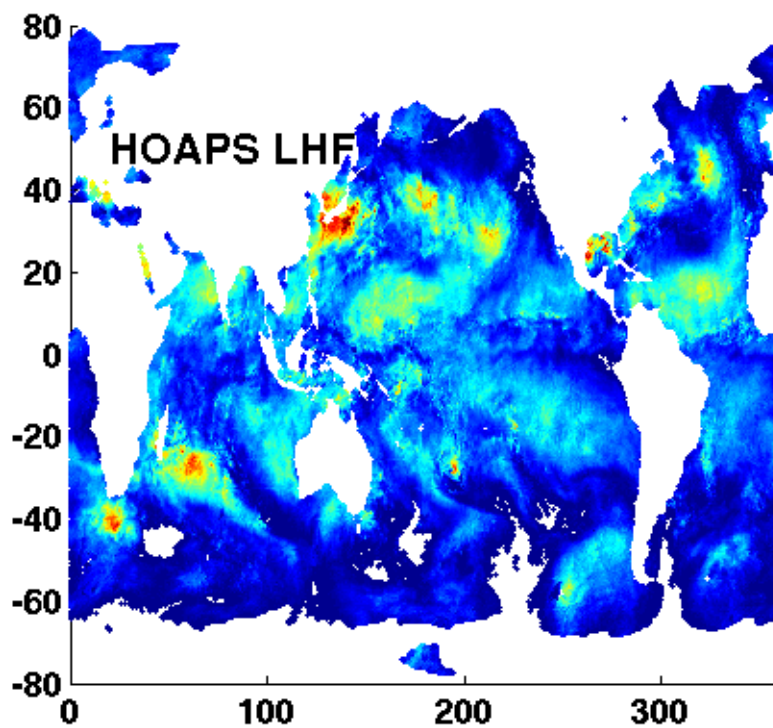
$$\tilde{X}(x_i, y_i) = \frac{x_i - x_2}{x_1 - x_2} \frac{y_i - y_2}{y_1 - y_2} X(x_1, y_1) + \frac{x_i - x_1}{x_2 - x_1} \frac{y_i - y_2}{y_1 - y_2} X(x_2, y_1) +$$

$$\frac{x_i - x_2}{x_1 - x_2} \frac{y_i - y_1}{y_2 - y_1} X(x_1, y_2) + \frac{x_i - x_1}{x_2 - x_1} \frac{y_i - y_1}{y_2 - y_1} X(x_2, y_2)$$

### 2<sup>nd</sup> Method: 2D Smoothing procedure (code from S. Gulev) : Modified method of local procedures (Akima, 1970)

# Example of Standardization Results

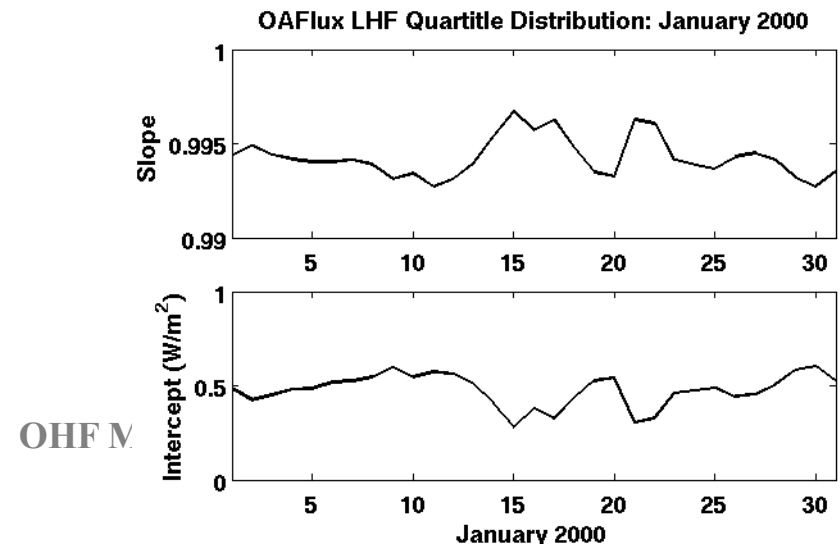
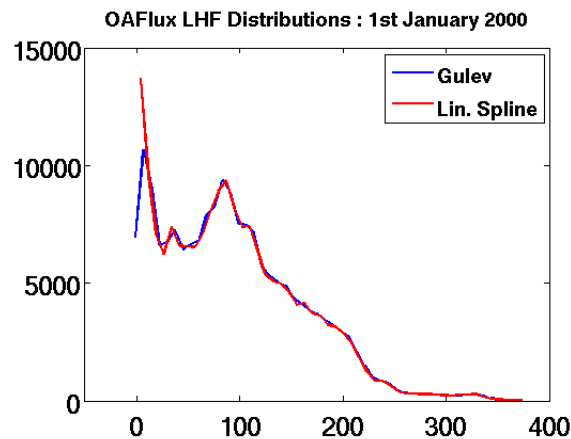
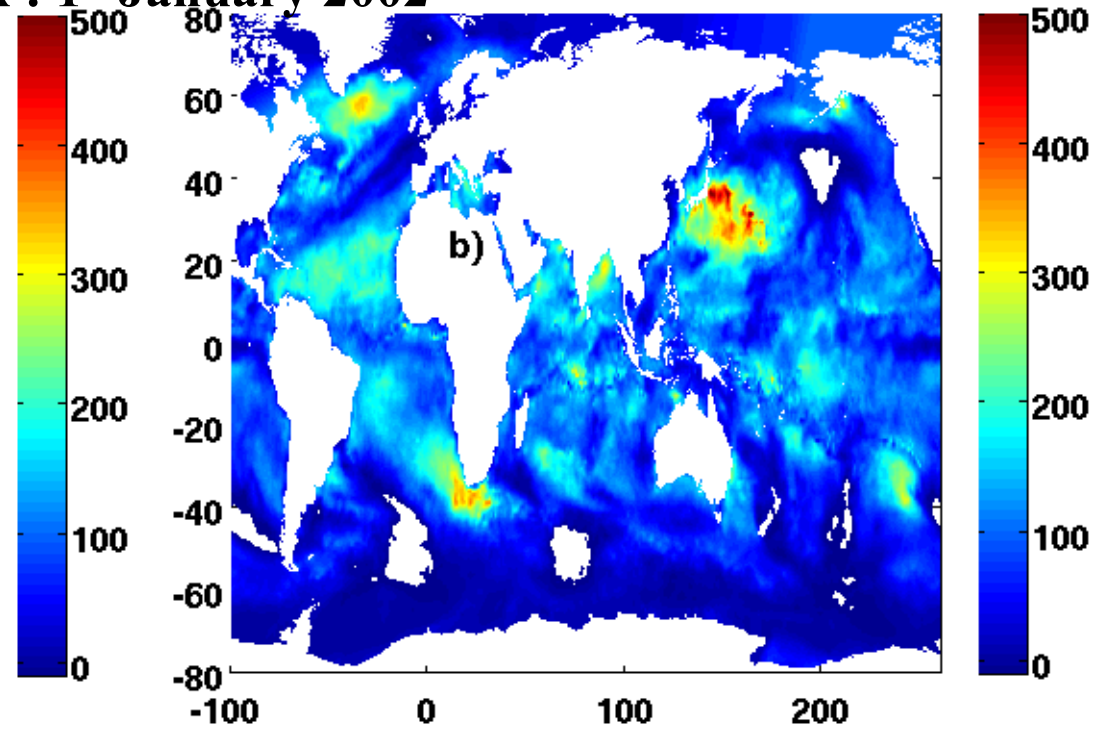
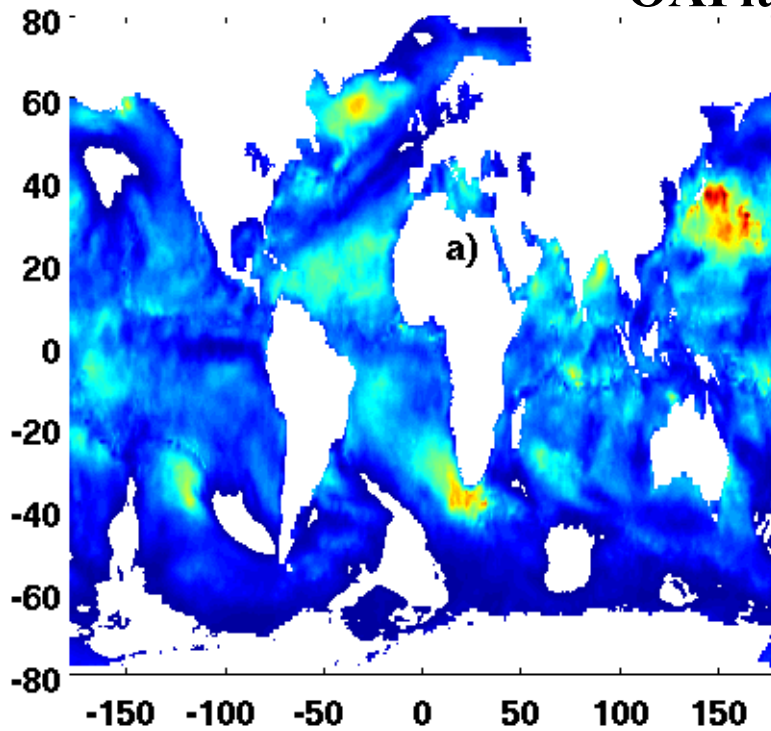
1<sup>st</sup> January 2002





# Quality Control: Comparison of the interpolation methods

OAFlex : 1<sup>st</sup> January 2002

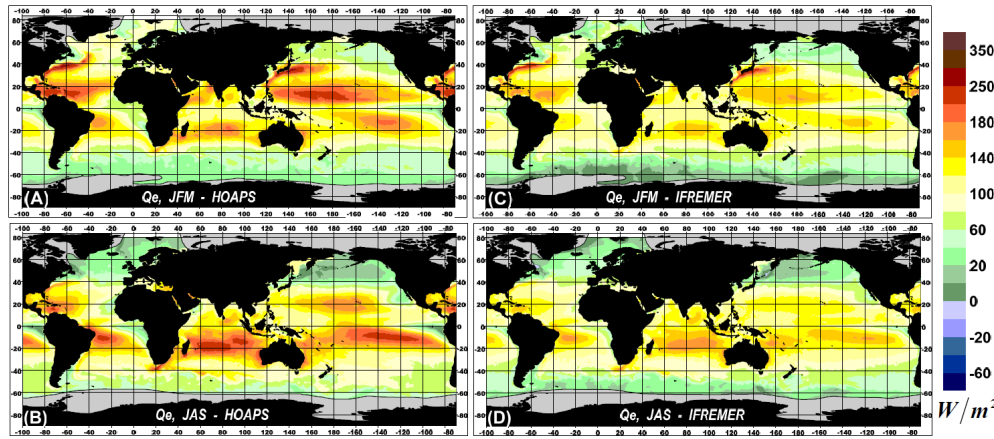


OHF M

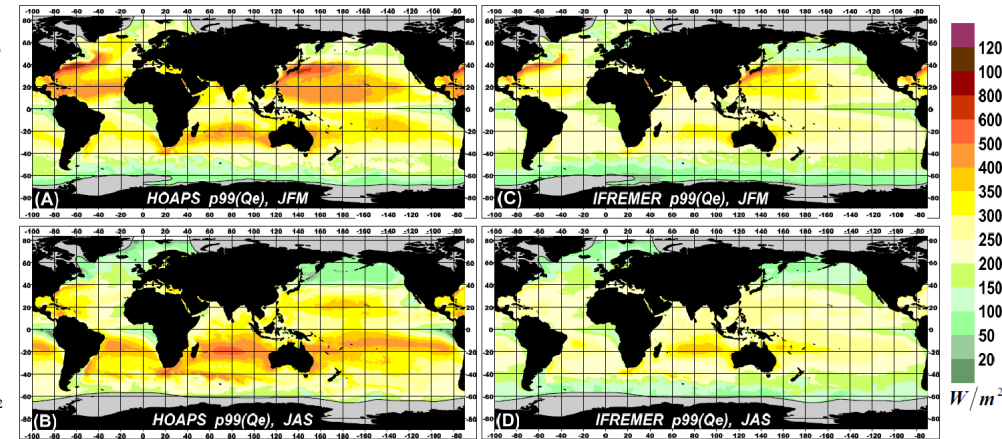
➤ Using Standardized Product for Inter-comparison and Error characterization Purposes (*WP33*)

$$P(x) = \alpha\beta \exp(-\beta x) \exp(-\alpha \exp(-\beta x))$$

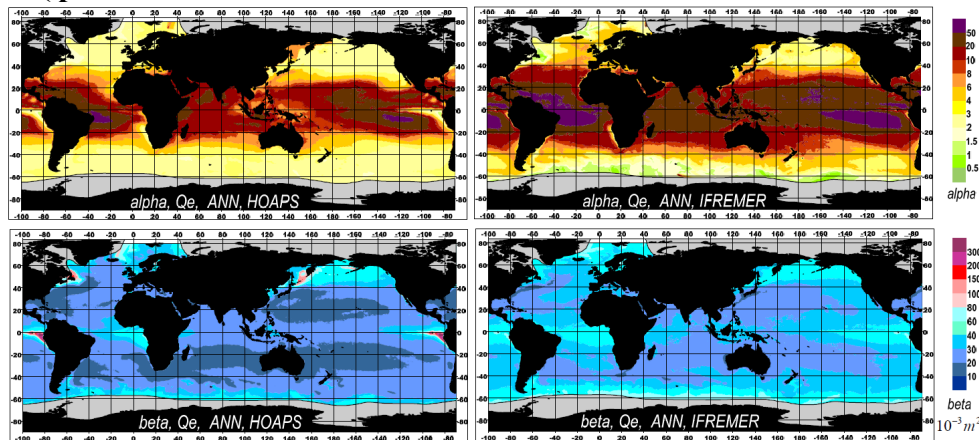
Mean latent turbulent heat fluxes for the period 2000-2007



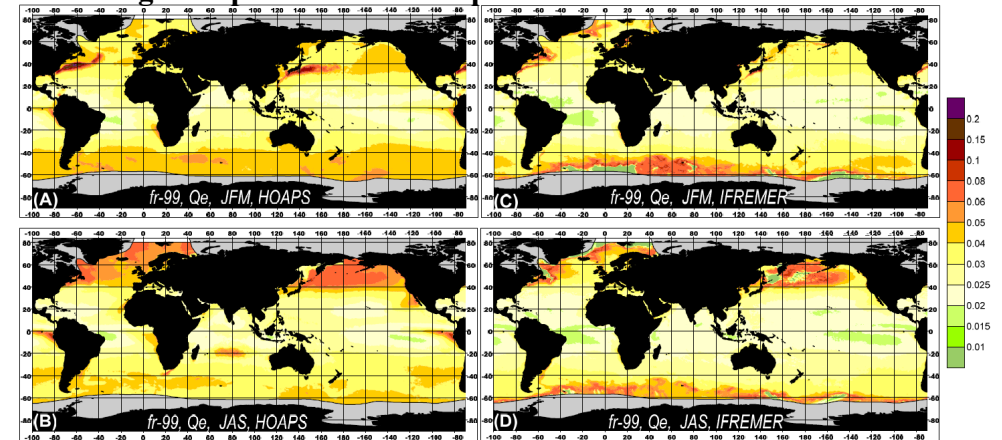
Mean 99th percentiles of the latent turbulent heat flux



Climatological mean (2000-2007) location and scale (parameters of the MFT distribution)



Mean fractional contribution (fraction of unity) of the latent fluxes exceeding 99th percentile for the period





## OHF : WP22 Status

- WP22 Homogenization of turbulent flux data
  - 1999 – 2009 daily /  $0.25^\circ \times 0.25^\circ$  are calculated
  - products are available on OHF web site
  - Quality controlled
  - Assessment of the resulting product quality
  - Report
- Include CFSR and MERA
- Using Daily HOAPS estimates