Improving Geodetic/Geophysical Models Used to Estimate EOPs

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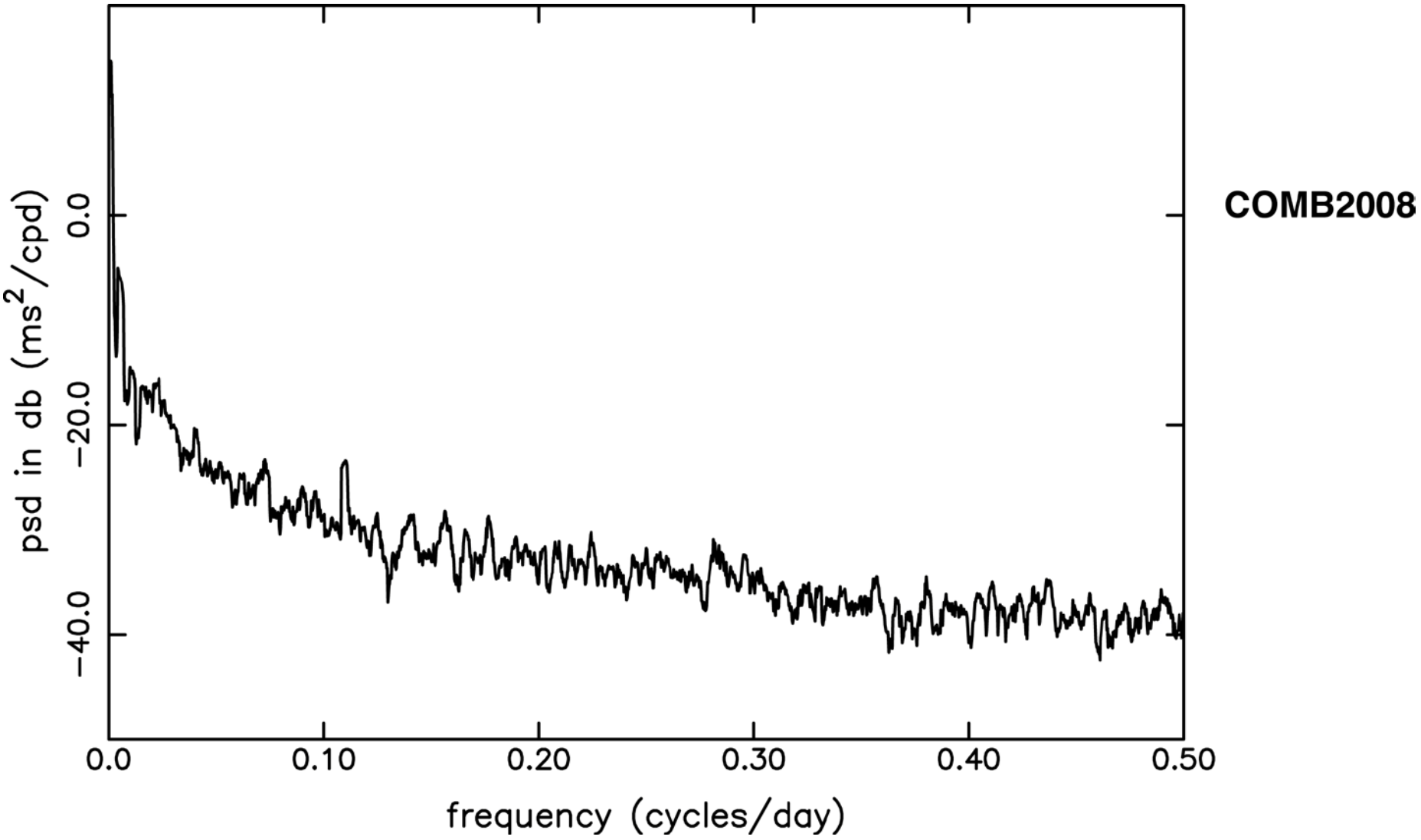
Geodetic/Geophysical Models

- Tidal models
  - Subdaily (diurnal, semidiurnal)
    - Errors can alias to long periods (e.g. O1 aliases to 14.2 days)
  - Long-period (monthly, fortnightly, etc.)
    - Errors can impact EOP estimation
- Non-Tidal ocean general circulation models
  - Typically Boussinesq and thus contain spurious signals
    - Can be corrected, but only at periods where i.b. approx. is valid (> 10 days)
  - Typically not forced with surface pressure
    - Ocean responds as i.b. at long periods, but dynamically at shorter periods
    - Short period response not being modeled
- Numerical weather prediction models (atm)
  - Are not Boussinesq, but are also not mass conserving
    - Wealth of data being ingested keeps products from drifting too much
  - Mass non-conservation problematic for geodetic applications

LOD – Tides – (AAM+OAM)



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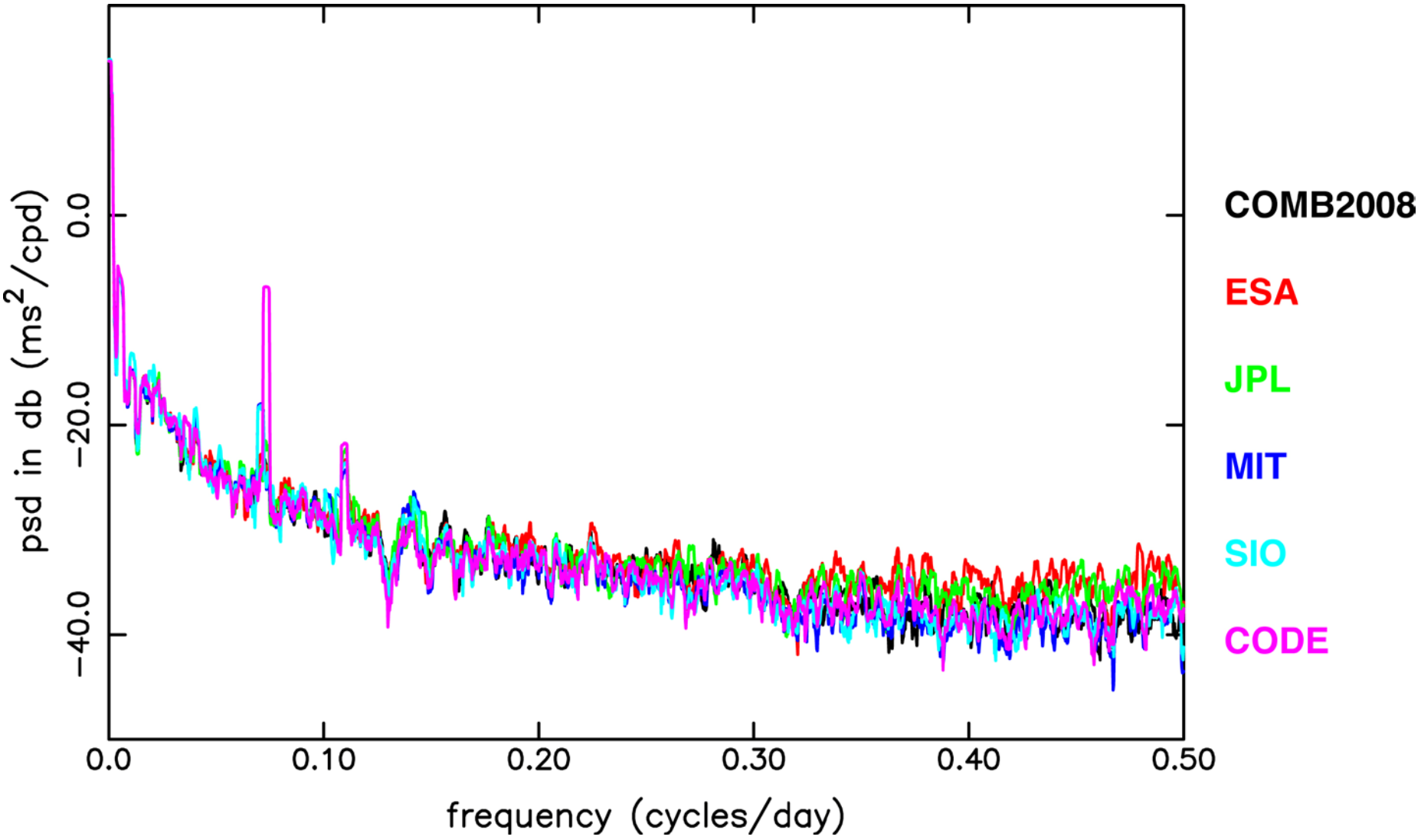
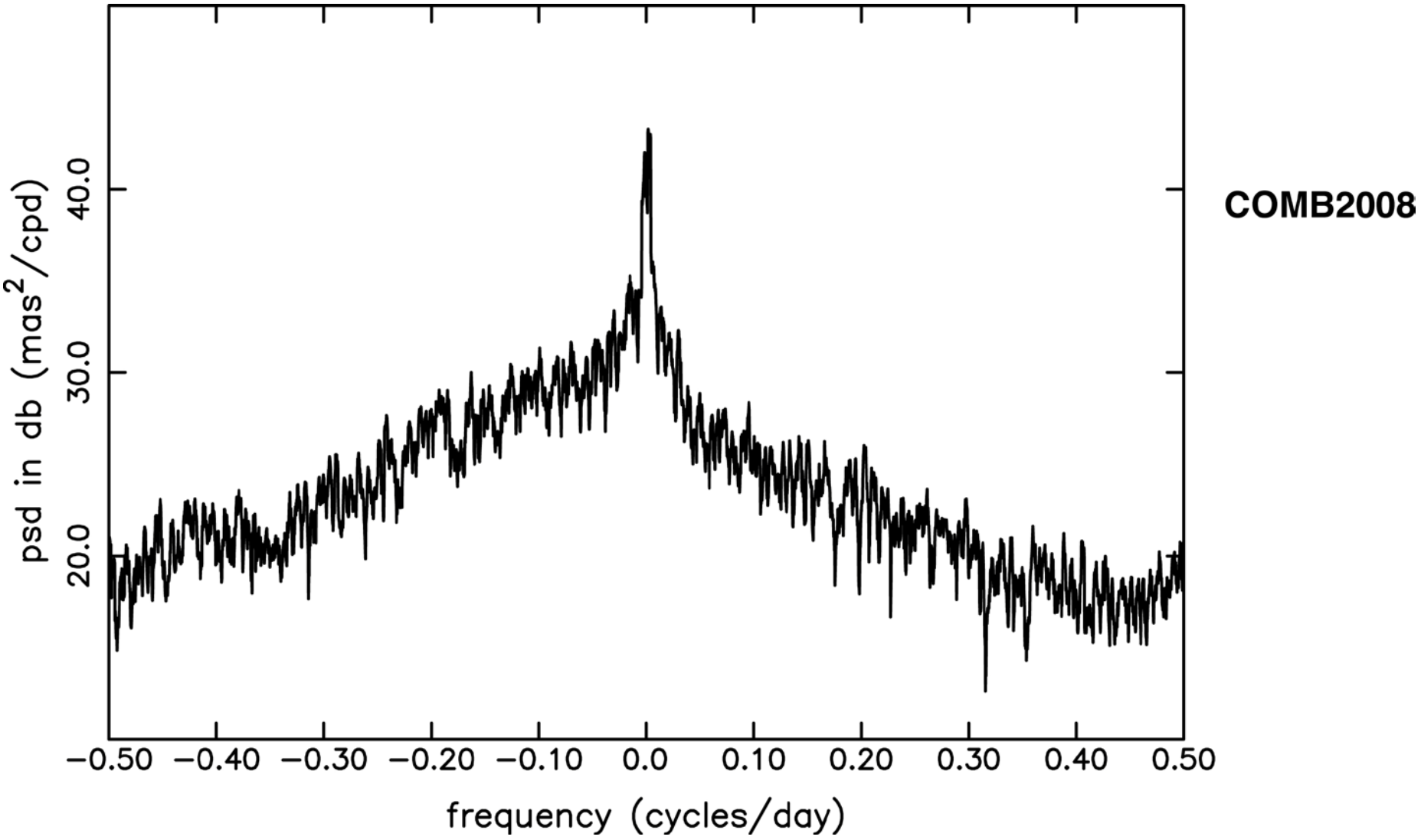


Period of Spectral Peaks (LOD)

Analysis Center	Mtm	Mf	Aliased O1
COMB2008	9.1		
JPL	9.1	13.6	
CODE	9.1	13.6	
ESA	9.1		14.2
MIT	9.1		14.2
SIO	9.1		14.2

(period given in solar days)

PM Exc – Tides – (AAM+OAM)



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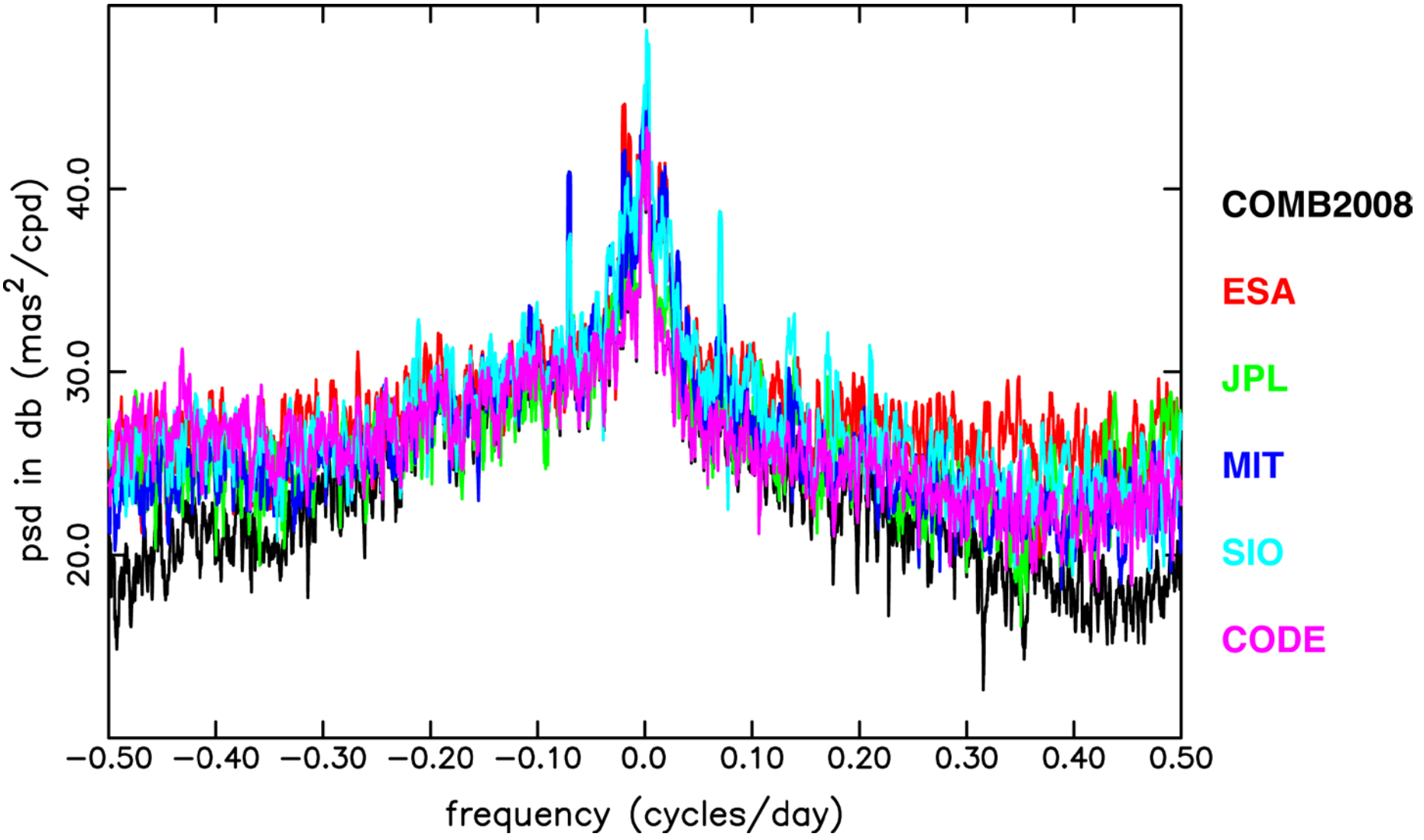

Period of Spectral Peaks (PM Exc)

Analysis Center	Aliased O1				
COMB2008	---	---	---	---	---
ESA	---	---	---	---	---
CODE	---	---	---	---	---
JPL	± 14.2	9.3	7.1	5.8	4.7
MIT	-14.2,13.7	-9.3	---	---	---
SIO	±14.2	---	±7.2	5.8	±4.7

(period given in solar days)

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