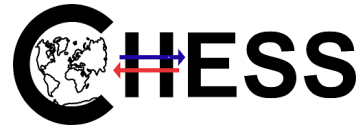




Helmholtz Graduate School
for Polar and Marine Research



Research School on Changing
Climates in the Coupled Earth System

- A Joint POLMAR – CHESS course -

Ocean/Atmosphere Time Series Analysis: Theory and Practice

Dr. Jonathan Lilly, Northwest Research Associates, Seattle

Date & Time:	Oct 15 – 26, 2018; 10 am – 3 pm (approx. times)
Location:	E - 4025
Language:	English
POLMAR credit points:	10
Registration:	info.polmar@awi.de

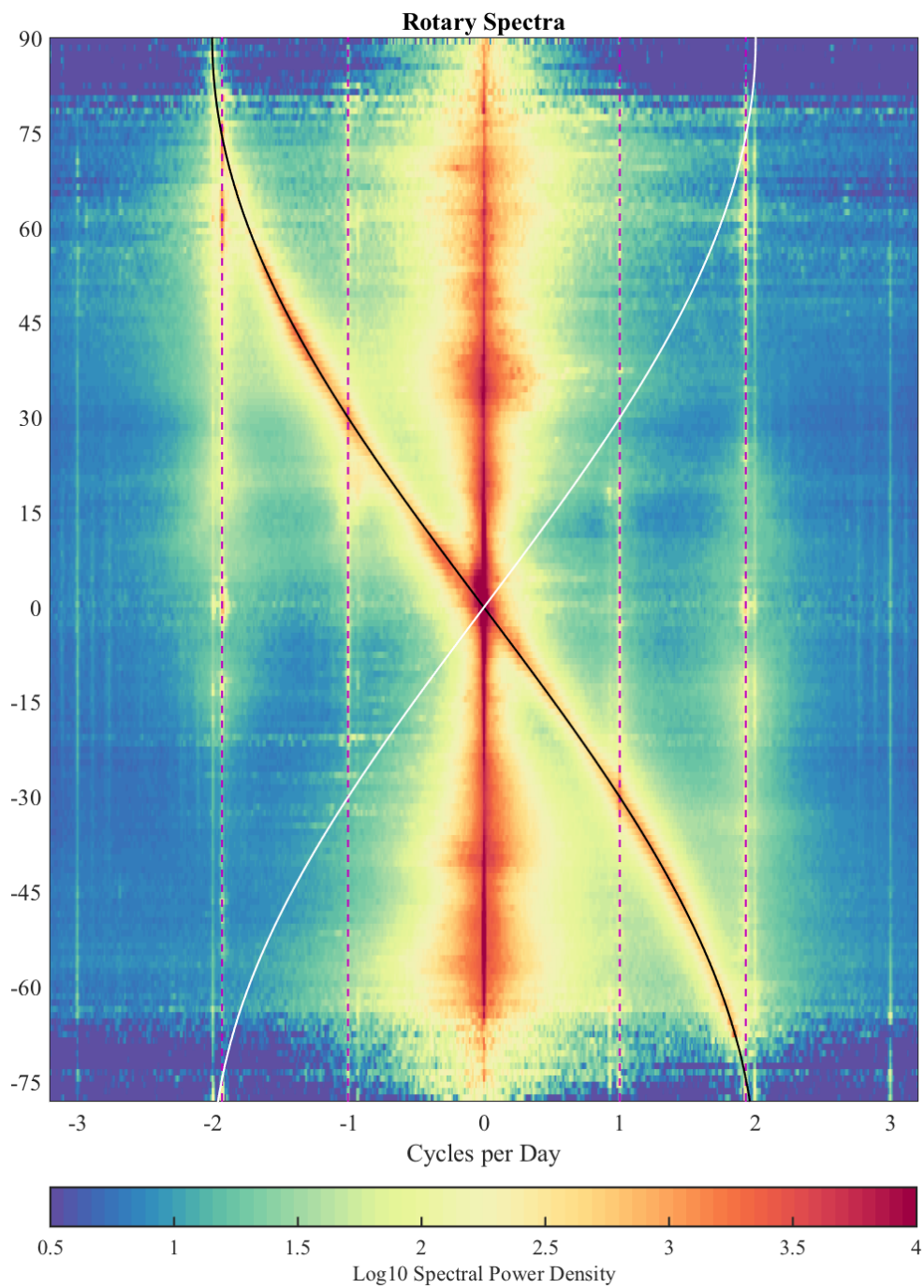
Course content:

This course will introduce students to classical as well as cutting-edge techniques of time series analysis. In addition to 'low-tech' methods such as creative use of statistics and simple filtering, more advanced methods of spectral and wavelet analysis will also be taught. The chosen techniques are those that experience has shown to be the most useful in dealing with time series from the ocean and the atmosphere.

Emphasis will be given to hands-on, practical application of methods, as well as to understanding the theory behind various methods. Extensive course notes may be found at <http://www.jmlilly.net/talks/oslo/v2/index.html>, which will be updated prior to the course. The course will be taught using Matlab, primarily with the instructor's jLab toolbox, <http://www.jmlilly.net/jmlsoft.html>.

Students are expected to bring with them a time series dataset of their choice that they would like to investigate in detail. The final project will consist of applying the methods taught in the course to this dataset, and interpreting the results.

A one-week version of this course has been taught in Oslo in each of the previous two years. Based on feedback from students, the course has been extended to two weeks. This will enable the students to make substantial progress in analyzing their chosen dataset, as well as allowing more time for developing a fluency with the various methods. This will be the first time that the course is offered at AWI. Like last year's course, it will be open to international students, with participants from both Germany and Norway.



Rotary spectra of velocity from the Global Surface Drifter dataset. (Figure courtesy of J. Lilly)

Course structure:

The course will run Monday through Friday from Oct 15 to Oct 26. There will be eight days of lectures and labs, roughly from 10 AM to 3 PM, and two rest days.

Target group:

The course is open to doctoral candidates in marine and climate sciences, working with time series data sets. Place availability permitting, Master's students or young postdocs are equally invited to apply.

Pre-requisites:

Students are expected to bring a laptop with a recent version of Matlab. Students should have some prior experience with elementary statistics, complex numbers, the Fourier transform, and working in Matlab.

More information:

The instructor is an oceanographer who is also a leading researcher in time series methodology. For example, his work on the continuous wavelet transform, together with collaborator S. Olhede, has been adopted as the standard in Matlab's implementation. More information on his research can be found at www.jmlilly.net.

Our courses are generally free of charge for all participants. However, they do have a price and can cost POLMAR as much as 150 euros per day per student. Please take this into account when cancelling your place at the last minute.
