H2011 - FRIST 7.mars 2011

Masteroppgave i Geovitenskap –

(studieretning - fordypning)

Prosjekttittel:

Inversion for Global Earth Structure Using Travel Times and Amplitudes

Veileder: Henk Keers

Evt. medveileder: Lars Ottemoeller, Mohammad Raeesi

Formål (kort beskrivelse av prosjektet, maks. ½ A4 side):

Seismological models of the Earth’s mantle and core are derived from three types of data: normal modes, surface waves and body waves. While normal modes are useful to determine large scale features of the Earth’s mantle and core and surface waves give detailed information of the upper 100km-300km of the mantle, body waves are used to determine the structure of the Earth in all areas of the mantle and core in relatively high detail. However, one disadvantage of the body wave inversions is that until now they have only been using the travel times of the seismic arrivals (such as P, pP, PcP, PKP, S, sS, etc.) and not the whole waveforms.

The goal of this project is to develop seismic modeling and inversion methods that invert for whole Earth structure using not only the travel times but also the amplitudes and whole waveforms of the body wave arrivals. For this ray tracing software will be developed that computes the amplitudes and waveforms. This will initially be done for elastic isotropic Earth models. In a second step this will be extended to also include anisotropic waves.

Eksterne data (ved bruk av data fra eksterne bedrift, er disse tilgjengelige ved oppstart av masteroppgaven?):

Feltarbeid:

Laboratoriearbeid:

Finansiering:

Størrelse på oppgaven:
(normalt 60 stp = 1 år fulltidsstudium. 30 stp = ½ års fulltidsstudium (kun Basinmaster))
Emner i spesialiseringen (60 sp):

dato/underskrift veileder/prosjektansvarlig