

What is Geodynamics ?

The branch of geophysics concerned with measuring, modeling, and interpreting the configuration and motion of the crust, mantle, and core of the earth and other planets.

What kind of things do we measure ?

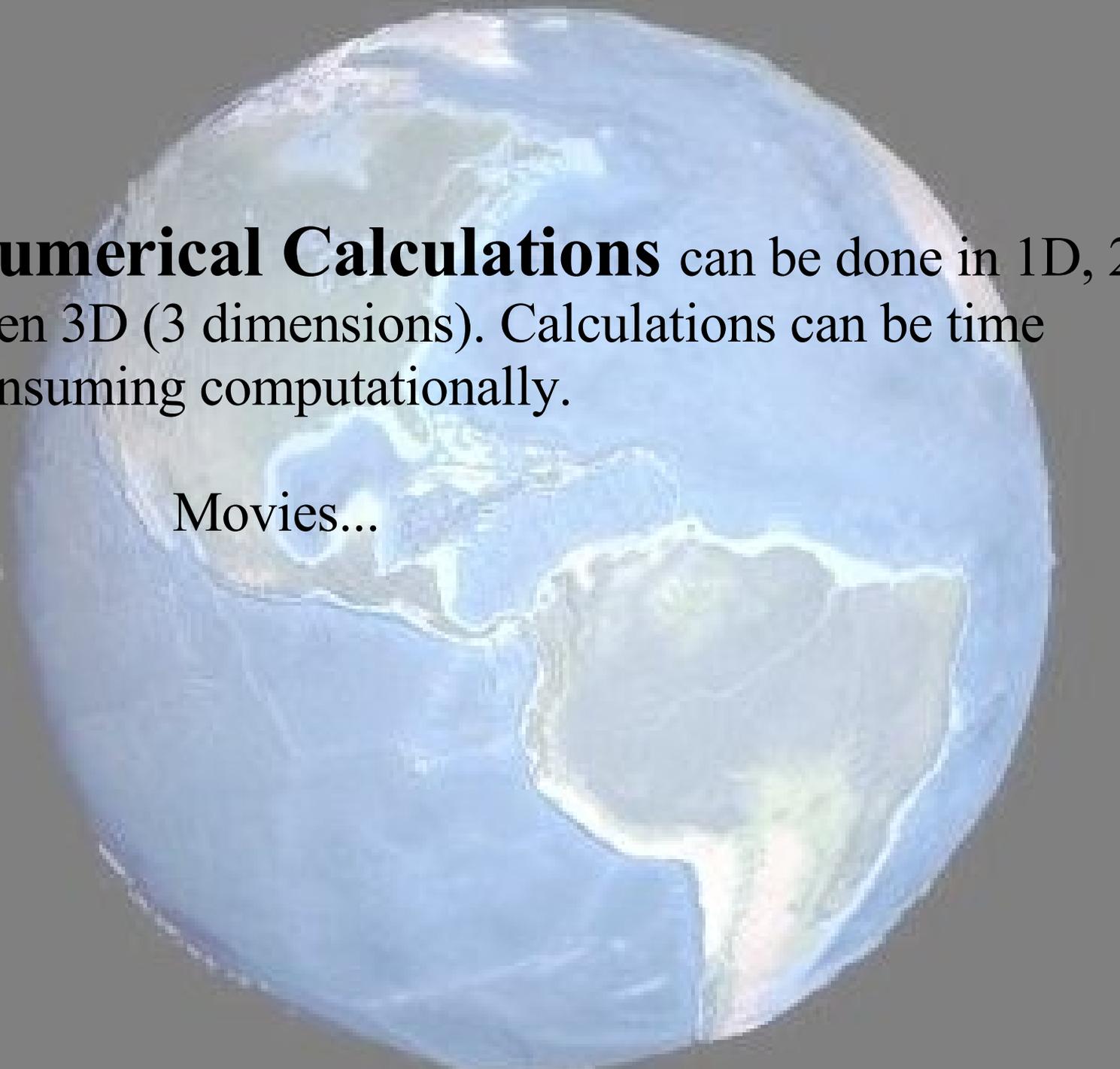
Geodynamicists are concerned with

- Plate tectonics in terms of motion, bending, formation, deformation, driving mechanisms.
- Movement and/or flow of mantle material
- Heat generation and heat transfer between materials
- Melt migration in magma chambers or upper mantle
- Rheology of the crust, mantle, and core
- Preservation of geochemical pockets of reservoirs

What techniques are used in Geodynamics ?

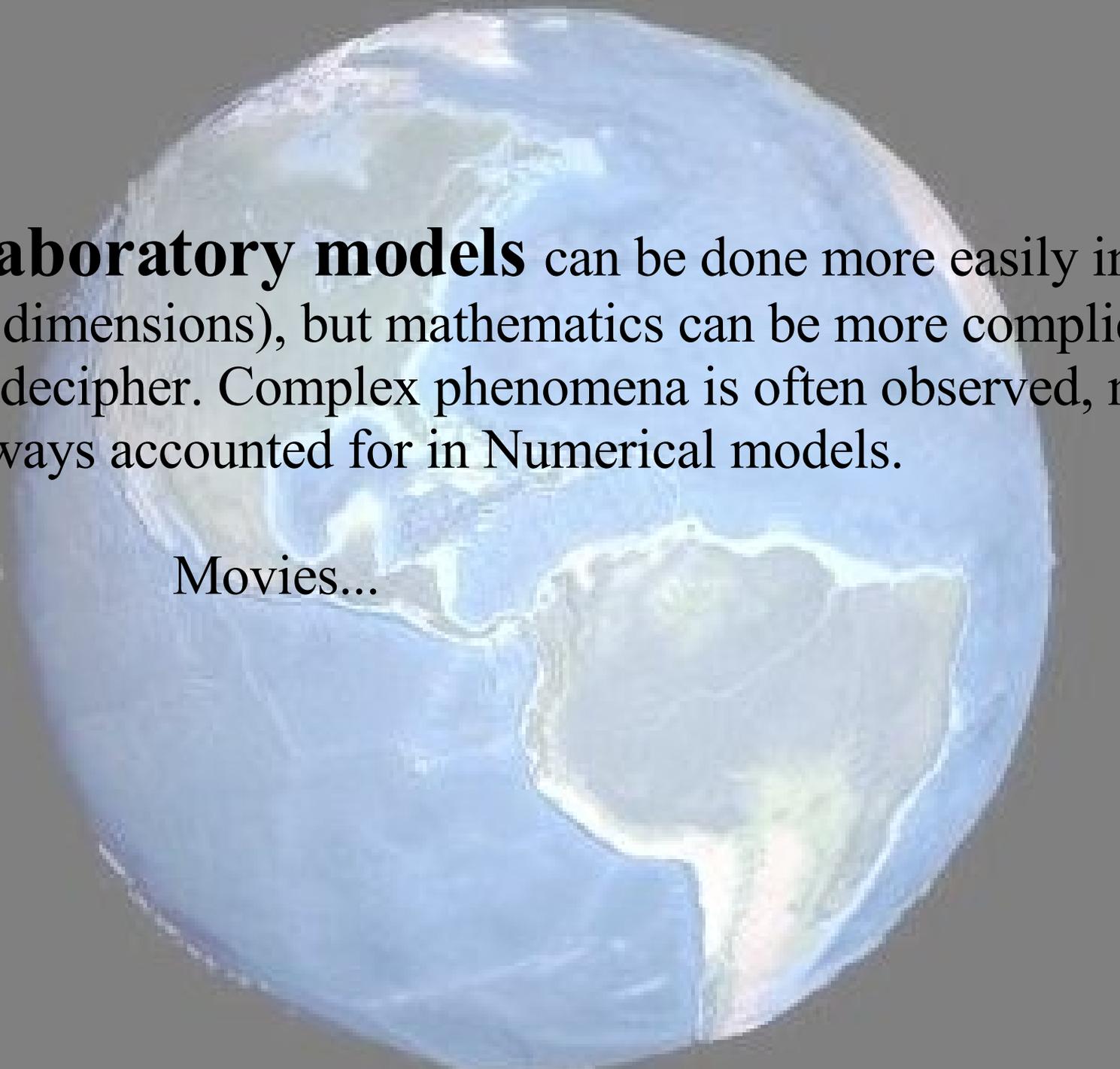
Problems are studied using modeling techniques:

- **Analytical solutions** use equations and may find exact or approximate solutions
- **Numerical calculations** explore possible models, physical laws, and approximate solutions
- **Physical experiments** test similar models necessarily incorporating all required physical laws showing real outcomes



Numerical Calculations can be done in 1D, 2D, or even 3D (3 dimensions). Calculations can be time consuming computationally.

Movies...



Laboratory models can be done more easily in 3D (3 dimensions), but mathematics can be more complicated to decipher. Complex phenomena is often observed, not always accounted for in Numerical models.

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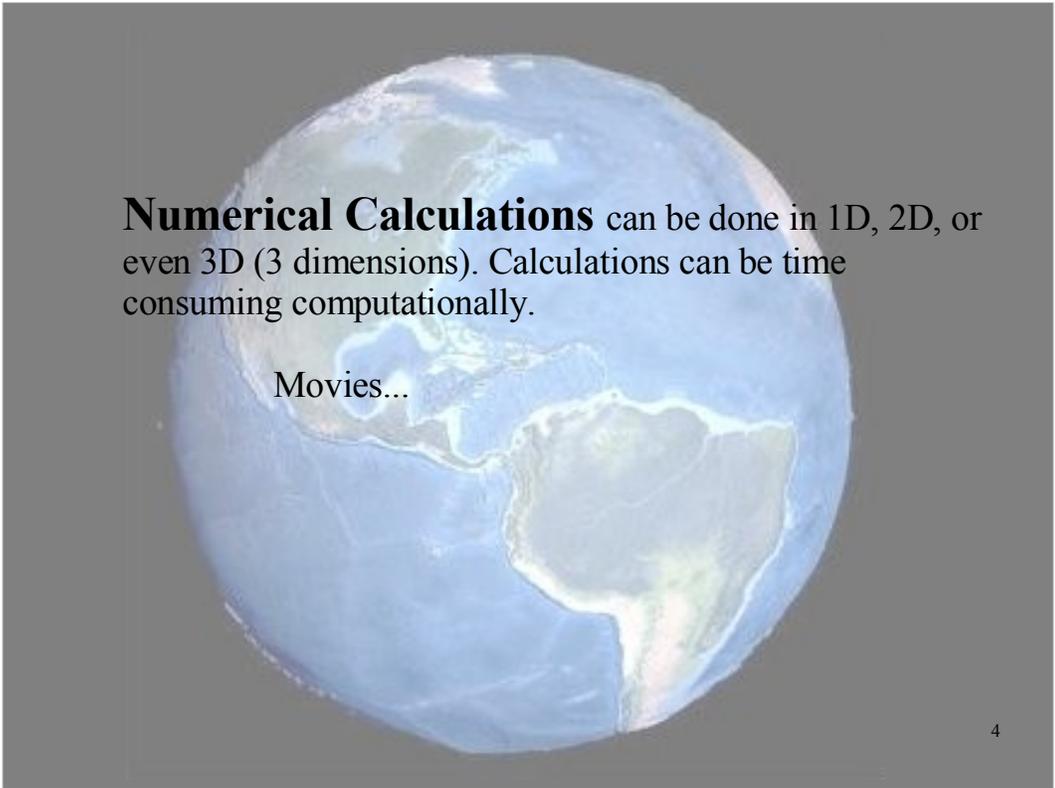
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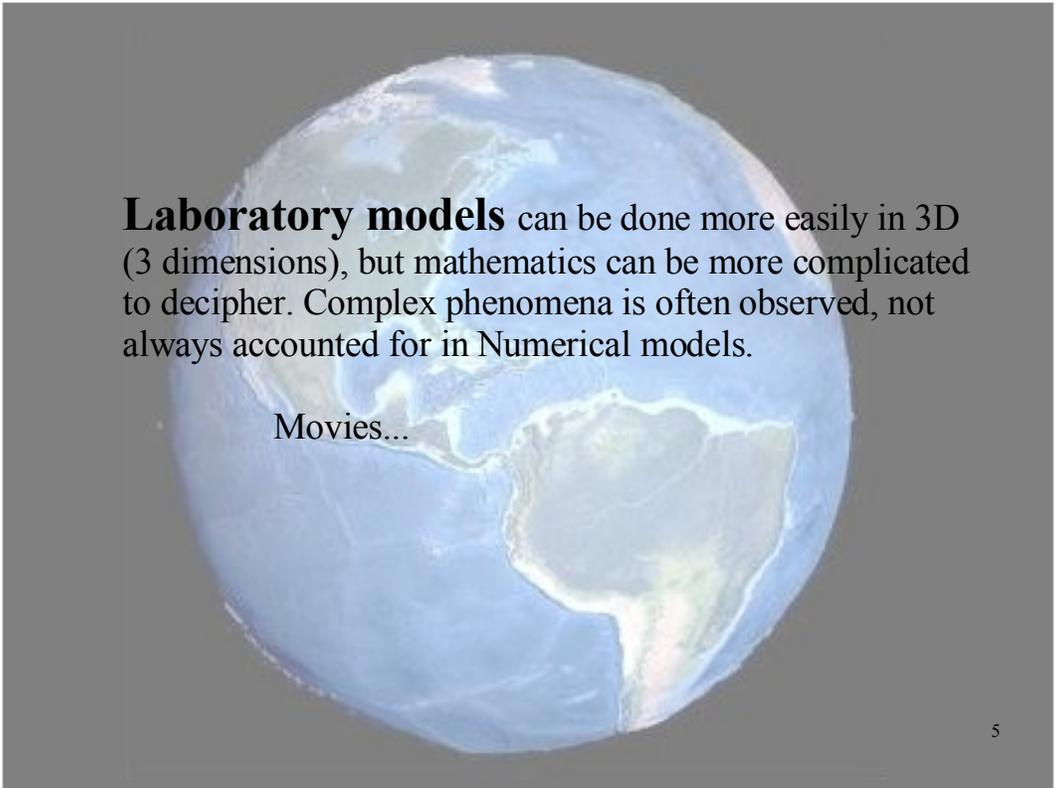
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A 3D rendering of the Earth, showing the continents of North and South America. The globe is centered on the Atlantic Ocean, with the Americas visible on the right side. The text is overlaid on the left side of the globe.

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A 3D rendering of the Earth, showing the continents of North and South America. The globe is set against a dark grey background. The text is overlaid on the left side of the globe.

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