

[Impact of Model Structure and Dynamics - version 2](#)

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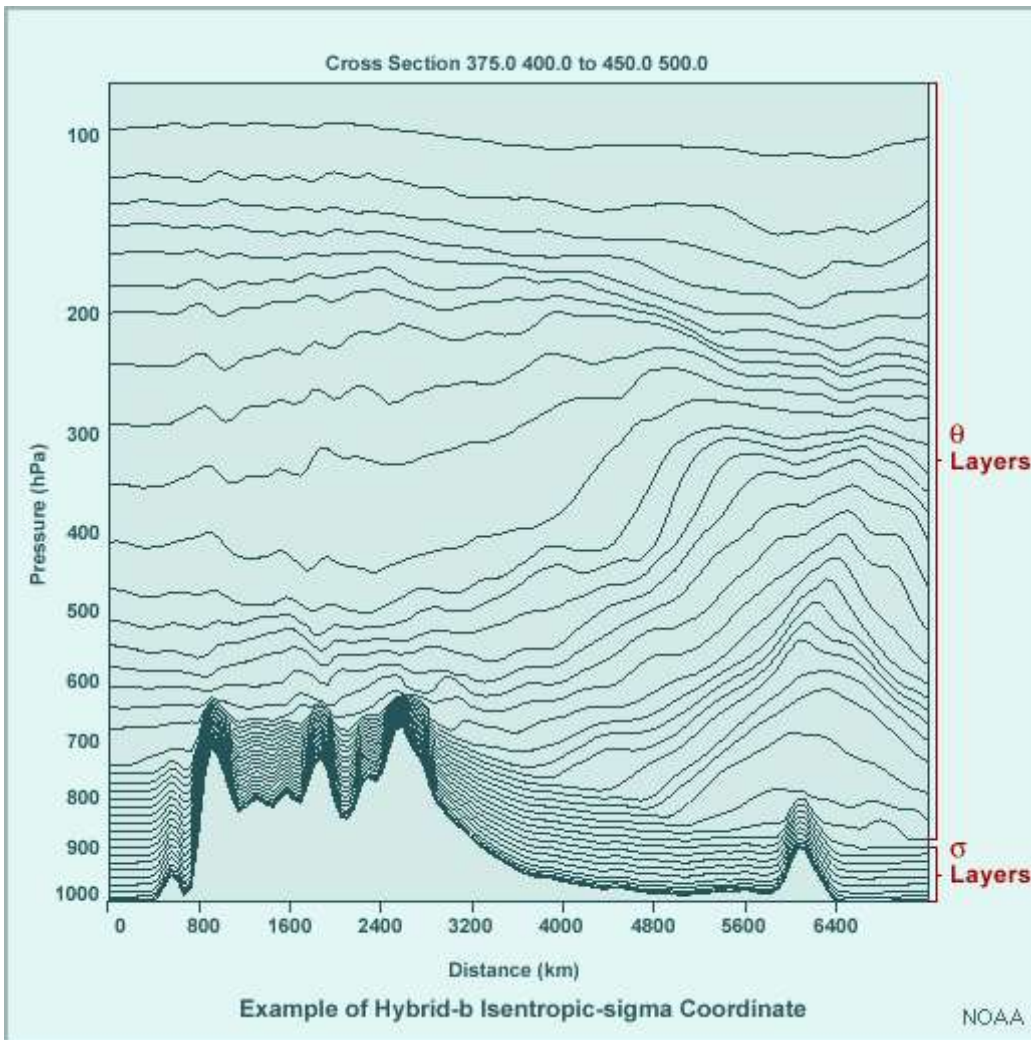
- [Model Type](#)
- [Vertical Coordinates](#)
 - [Introduction](#)
 - [Sigma Coordinates](#)
 - [* Eta Coordinates](#)
 - [* Isentropic Coordinates](#)
 - [Hybrid Coordinates](#)
 - [Hybrid Coordinates](#)
 - [Hybrid Sigma-Pressure](#)
 - [Sigma-Pressure Advantages](#)
 - [Sigma-Pressure Limitations](#)
 - [*Hybrid Isentropic-Sigma](#)
 - [*Isentropic-Sigma Advantages](#)
 - [*Isentropic-Sigma Limitations](#)
 - [Hi-Res., Nonhydro. Models](#)
 - [Questions](#)
 - [Summary](#)
- [Horizontal Resolution](#)
- [Vertical Resolution](#)
- [Domain & Bndy. Conds.](#)
- [References](#)

- [Home](#)
- [Print Version](#)
- [Quiz](#)
- [Survey](#)

* Hybrid Isentropic-Sigma Vertical Coordinate System

- [« Previous](#)
- [Next »](#)

Hybrid isentropic-sigma coordinate models have a combination of sigma layers at the bottom that shift to isentropic layers above. Uniting theta and sigma into one vertical coordinate system combines the terrain-following advantages of sigma and the increased vertical resolution in key baroclinic areas due to the adaptive nature of isentropic surfaces. This is a powerful solution to some of the limitations of using either system independently.



The boundary sigma layer must be sufficiently deep to be able to model diurnal boundary-layer processes, including friction and heating. This typically requires that the sigma boundary layer be approximately 200 hPa deep. If the sigma layer is too shallow, superadiabatic layers can still form or will not be treated properly above the boundary sigma domain.

- [« Previous](#)
- [Next »](#)