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Supplement of

Pliocene Model Intercomparison (PlioMIP) Phase 2: scientific objectives and experimental design

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Supplement 1: Core Experimental Design Sheets

Pre-Industrial Experiment

Model Coupling

Atmosphere-Ocean-Vegetation

Integration Length

At least 500 years

Oceans

Ocean Mode	Ocean Input
<i>Predicted</i>	<i>Local Pre-Industrial/Modern</i>

Geographic Boundary Conditions

Land/Sea Mask	Topography	Ice Sheets	Vegetation
<i>Local Modern</i>	<i>Local Modern</i>	<i>Local Modern</i>	<i>Pre-industrial then predicted or Pre-industrial prescribed</i>

Greenhouse Gases

CO ₂	N ₂ O	CH ₄	CFCs	O ₃
<i>280 ppm</i>	<i>270 ppb</i>	<i>760 ppb</i>	<i>0</i>	<i>Local Modern</i>

Solar Constant

1365 W/m²

Aerosols

Pre-industrial

Model Spin-up

Documented by individual groups

Orbital Parameters

*[ecc = 0.016724] - [obl = 23.446°] - [peri - 180° = 102.04°]
Date of vernal equinox March 21 at noon*

Pliocene Experiment – Standard Boundary Conditions

Model Coupling

Atmosphere-Ocean-Vegetation

Integration Length

At least 500 years

Oceans

Ocean Mode	Deep Ocean Input		
<i>Predicted</i>	<i>Previously spun up Pliocene simulation or pre-industrial</i>		
Land/Sea Mask	Topography*	Ice Mask	Vegetation
<i>Plio_sdt_LSM_v1.0.nc</i>	<i>Plio_sdt_topo_v1.0.nc</i>	<i>Plio_sdt_icemask_v1.0.nc</i>	<i>Dynamic or Plio_std_mbiome_v1.0.nc</i>

Greenhouse Gases

CO ₂	N ₂ O	CH ₄	CFCs	O ₃
<i>400 ppm</i>	<i>As PI Control</i>	<i>As PI Control</i>	<i>As PI Control</i>	<i>As PI Control</i>

Solar Constant

As PI Control

Aerosols

As PI Control

Model Spin-up

Documented by individual groups

Orbital Parameters

As PI Control

* Apply using anomaly method

Pliocene Experiment – Enhanced Boundary Conditions

Model Coupling

Atmosphere-Ocean-Vegetation

Integration Length

At least 500 years

Oceans

Ocean Mode	Deep Ocean Input		
<i>Predicted</i>	<i>Previously spun up Pliocene simulation or pre-industrial</i>		
Land/Sea Mask	Topography*	Ice Mask	Vegetation
<i>Plio_enh_LSM_v1.0.nc</i>	<i>Plio_enh_topo_v1.0.nc</i>	<i>Plio_enh_icemask_v1.0.nc</i>	<i>Dynamic or Plio_enh_mbiome_v1.0.nc</i>

Greenhouse Gases

CO ₂	N ₂ O	CH ₄	CFCs	O ₃
<i>400 ppm</i>	<i>As PI Control</i>	<i>As PI Control</i>	<i>As PI Control</i>	<i>As PI Control</i>

Solar Constant

As PI Control

Aerosols

As PI Control

Model Spin-up

Documented by individual groups

Orbital Parameters

As PI Control

* Apply using anomaly method.