Newsletter November 2022

Dear PalMod members,

thank you for your patience, after having to start with bad news last time, I can now share some good news:

we expect to get the scientific reviews shortly from DLR. We will be requested to answer the recommendations of the reviewers and maybe update our proposal from last January.
In short: it appears, that we can start the formal application procedure for a PalMod Phase III very soon.
Yet, it is not clear, when exactly the Phase III will start. Maybe there will be more than one starting date to take the different project runtimes due to the cost neutral extensions into account. Nevertheless, our goal will be, to continue the positions for all colleagues as seamless as possible.

Moreover, in the Newsletter you will find

- the usual update on Milestones and Deliverables
- final numbers from the DKRZ resource application for 2023
- a list of new PalMod related papers
    - please contact me, if your paper is missing
- last but not least: GIA training school announcement

Update on Milestones and Deliverables (Status 01.11.2022)

WP	WG	Due To	DAYS	Responsible	Task	
WG2	WP2.2 M2	30.06.22	-124	MPI	Biogeophysical and biogeochemical feedbacks between terrestrial biosphere and climate are assessed	
WG3	WP3.1 D4	30.06.22	-124	Marum	Global synthesis of planktonic foraminifera abundance time series spanning 130,000 years	
WG3	WP3.1 M4	30.06.22	-124	Marum	Finalise synthesis of planktonic foraminifera abundance time series	
WG3	WP3.2 M6	30.06.22	-124	AWI	Vegetation dynamics analysed including model-proxy comparison	
WG3	WP3.2 M9	30.06.22	-124	MUN	Inclusion of some of the major last glacial cycle ice caps	
WG3	WP3.3 D3	30.06.22	-124	Marum, AWI-B	Transient simulations including water isotopes for last glacial inception	
CC	CC2 M18	30.03.22	-216	GEOMAR	Volcanic forcing data files constructed and tested	
WG2	WP2.2 M6	30.03.22	-216	UNI HH	Manuscript about the role of shelf weathering on land-ocean biogeochemical matter fluxes	
WG3	WP3.1 D2	30.03.22	-216	Marum	Extended marine paleoclimate data synthesis	
WG3	WP3.1 M2	30.03.22	-216	Marum	Updated marine proxy synthesis that includes temperature reconstructions without benthic δ18O chronology	
WG3	WP3.2 D2	30.03.22	-216	GFZ	Update of the PALIM data-base to integrate chronological links to the marine data-base	
WG3	WP3.2 M1	30.03.22	-216	GFZ	Synchronization of lacustrine and marine data-bases	
WG3	WP3.2 M3	30.03.22	-216	GFZ	Improved proxy-system models for key climate proxies including varve thickness data	
WG3	WP3.2 M8	30.03.22	-216	MUN	Revised calibrated distribution of last glacial cycle ice sheet chronologies and associated 1D regional Earth models	
WG3	WP3.3 M2	30.03.22	-216	Marum, AWI-B	Transient simulations of the Holocene and last glacial inception set up and ready to run	
WG2	WP2.2 M5	30.12.21	-306	UNI HH	Mapping of the geochemical and lithological characteristics of the continental shelves	
WG2	WP2.3 M5	30.11.21	-336	MPI-C	Analysis of methane sink in transient simulations, publication draf	
WG2	WP2.3 D3	30.11.21	-336	MPI-C	Publication on transient deglaciation experiments with methane sinks submitted	
WG3	WP3.1 D6	30.09.21	-397	Marum	Updated version of PaleoDataView including DTW functionality	
WG2	WP2.1 M1	30.06.21	-489	AWI	Adjust REcoM model for simulating prognostic atmospheric CO2 concentrations, including fluxes from weathering, and volcanism.	
WG2	WP2.1 M2	30.06.21	-489	AWI	Include iron sources from marine shelves, rivers, hydrothermal activity and sea ice in REcoM	

If you meet a M or D, please let me know (kfieg@geomar.de), so I can remove it from the list!

Numbers from resource request at DKRZ for 2023

Subproject	Computation time [node hours]	Storage WORK [TiB]	Storage ARCH [TiB]	Storage DOCU [TiB]
WG1, ba0989	2.021.500	1563	5.782	392
CC, bk0993	69.012	332	122	0
WG3, bb1029	129.000	237	119	11
WG2, bm1030	668.800	1.175	781	354
DM, bk1192	25.000	400	100	0
Total	**2.913.312**	**3.707**	**6.904**	**757**

I will keep you informed on the granted share after the WLAs vote in December.

PalMod Papers in 2022 (up to now)

Brovkin, V., Brook, E., Williams, J., Bathiany, S., Lenton, T., Barton, M., DeConto, R., Donges, J., Ganopolski, A., McManus, J., Praetorius, S., de Vernal, A., Abe-Ouchi, A., Cheng, H., Claussen, M., Crucifix, M., Gallopín, G., Iglesias, V., Kaufman, D., Kleinen, T., Lambert, F., van der Leeuw, S., Liddy, H., Loutre, M.-F., McGee, D., Rehfeld, K., Rhodes, R., Seddon, A., Trauth, M., Vanderveken, L. & Yu, Z. (2021). Past abrupt changes, tipping points and cascading impacts in the Earth system. Nature Geoscience, 14, 550-558. doi:10.1038/s41561-021-00790-5

Dallmeyer, A., Kleinen, T., Claussen, M., Weitzel, N., Cao, X. & Herzschuh, U. (2022). The deglacial forest conundrum. Nature Communications, 13: 6035. doi:10.1038/s41467-022-33646-6

Duque-Villegas, M., Claussen, M., Brovkin, V. & Kleinen, T. (2022). Effects of orbital forcing, greenhouse gases and ice sheets on Saharan greening in past and future multi-millennia. Climate of the Past. 18, 1897–1914. doi:10.5194/cp-2022-26

Du, J., **Ye. Y**, Zhang, X., **Völker, C**, J. Tian. Southern control of interhemispheric synergy on glacial marine carbon sequestration. Geophysical Research Letters, 2022. doi: 10.1029/2022GL099048.

Extier, T., Six, K.D., Liu, B., Ilyina, T., Paulsen, H.: Local oceanic CO2 outgassing triggered by terrestrial carbon fluxes during deglacial flooding, Clim. Past, 18, 273-292, https://doi.org/10.5194/cp-18-273-2022, 2022.

Fitzsimmons, K. E. and S. S. Gromov (2022). *Northward expansion of the westerlies over glacial southeastern Australia: evidence from semi-arid lunette dunes, temperate basalt plains, and wind modelling*. Front. Earth Sci. 10.

Ferreira, J. Q., C. M. Chiessi, M. Hirota, R. S. Oliveira, M. Prange, C. Häggi, S. Crivellari, S. D. Nandini-Weiss, D. J. Bertassoli Jr., M. C. Campos, S. Mulitza, A. L. S. Albuquerque, A. Bahr, and E. Schefuß, 2022: Changes in obliquity drive tree cover shifts in eastern tropical South America. Quaternary Science Reviews, 279, 107402, doi:10.1016/j.quascirev.2022.107402.

Green, R. A., Menviel, L., Meissner, K. J., Crosta, X., Chandan, D., Lohmann, G., Peltier, W. R., Shi, X., and Zhu, J.: Evaluating seasonal sea-ice cover over the Southern Ocean at the Last Glacial Maximum, Clim. Past, 18, 845–862, 2022. https://doi.org/10.5194/cp-18-845-2022

Gromov, S., V. Brovkin, C. Brühl, T. Kleinen, J. Lelieveld and B. Steil (2022). *Atmospheric CH4 lifetime variations on glacial-interglacial timescales*. Clim. Past (in prep.).

Herzschuh, U., Böhmer, T., Li, C., Cao, X., Hébert, R., Dallmeyer, A., et al. (2022). Reversals in temperature-precipitation correlations in the Northern Hemisphere extratropics during the Holocene. *Geophysical Research Letters*, 49, e2022GL099730.

https://doi.org/10.1029/2022GL099730

Hinck, S., Gowan, E. J., Zhang, X., and Lohmann, G.: PISM-LakeCC: Implementing an adaptive proglacial lake boundary in an ice sheet model, The Cryosphere, 16, 941–965, https://doi.org/10.5194/tc-16-941-2022, 2022

Kurahashi-Nakamura, T., Paul, A., Merkel, U., and Schulz, M.(2022): Glacial state of the global carbon cycle: time-slice simulations for the last glacial maximum with an Earth-system model, Clim. Past, 18, 1997–2019, https://doi.org/10.5194/cp-18-1997-2022.

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transient simulations from PMIP4 and PACMEDY, Clim. Past, 18, 1047–1070, https://doi.org/10.5194/cp-18-1047-2022

Sun, Y., Knorr, G., Zhang, X, Tarasov, L., Barker, S., Werner, M. and Lohmann, G. (2022) Ice Sheet Decline and Rising Atmospheric CO2 Control AMOC Sensitivity to Deglacial Meltwater Discharge. Global and Planetary Change. https://doi.org/10.1016/j.gloplacha.2022.103755

Schachtschneider, R., Saynisch-Wagner, J., Klemann, V., Bagge, M. & Thomas, M. An approach for constraining mantle viscosities through assimilation of palaeo sea level data into a glacial isostatic adjustment model. Nonlinear Process. Geophys. 29, 53–75 (2022). doi:10.5194/npg-29-53-2022

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Finally: the following training school announcement might be of interest for some of you:

GIA 3. – 7. 7. 2023, Sweden

A training school on **glacial isostatic adjustment (GIA) modelling** will be held from 3-7 July 2023 at Lantmäteriet, Gävle, Sweden. The program will include lectures and practical exercises aimed at investigating the interactions between solid Earth deformation, ice mass change, and associated sea-level and geoid variations, and a 1day field trip to examine records of land uplift and sea level change.

The course is targeted at individuals who are working on (or will soon start working on) GIA modelling, or topics directly related to GIA modelling. It is aimed at graduate students and early career scientists, but all interested parties are encouraged to apply regardless of age or experience level. An introduction to the fundamentals and applications of GIA modelling will be provided, no previous modelling experience is required.

For more details visit the webpage: https://polenet.org/2023-gia-training-school/

Applications open on November 1st, 2022.
Deadline for applications is January 31st, 2023.

Please send any queries to: 2023.gia.school@gmail.com

The organising committee Lambert Caron, **Volker Klemann**, Andrew Lloyd, Jun'ichi Okuno, Stephanie Sherman, Holger Steffen, Rebekka Steffen, Pippa Whitehouse, Terry Wilson, Maryam Yousefi