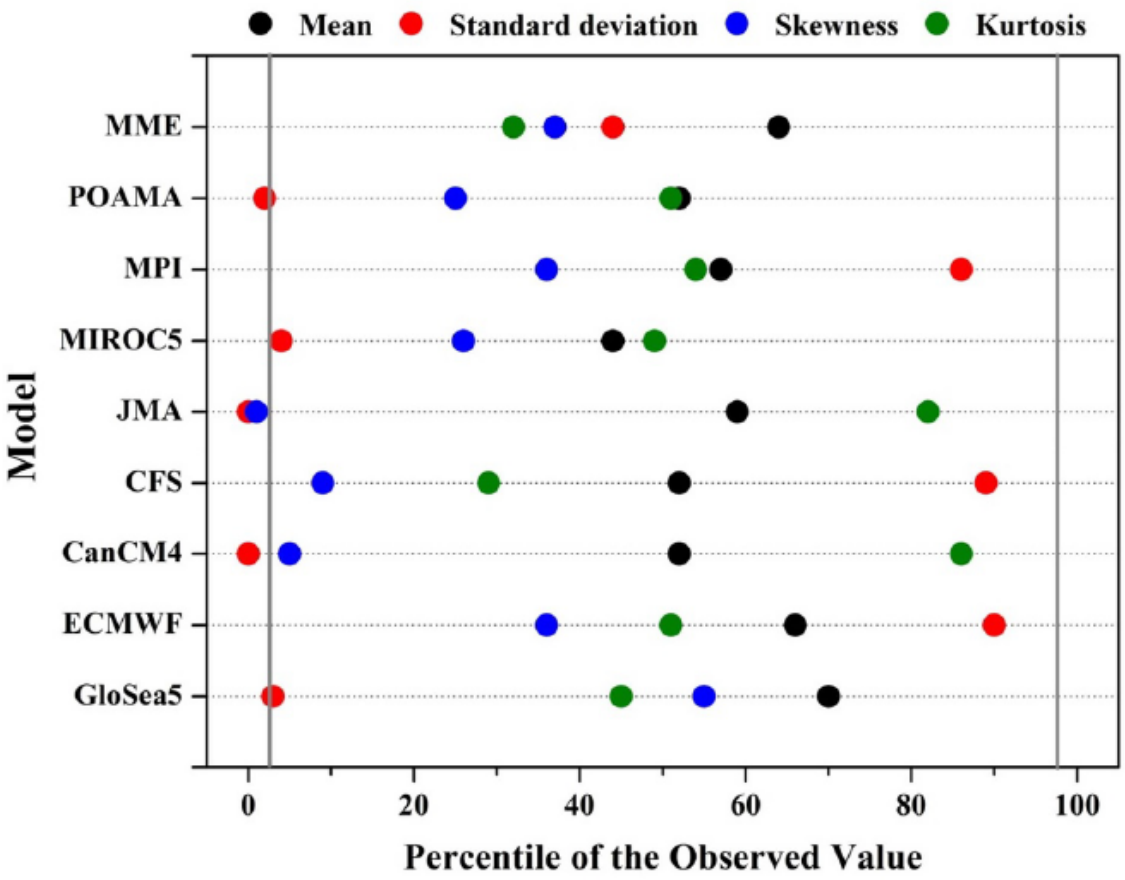
CHFP update

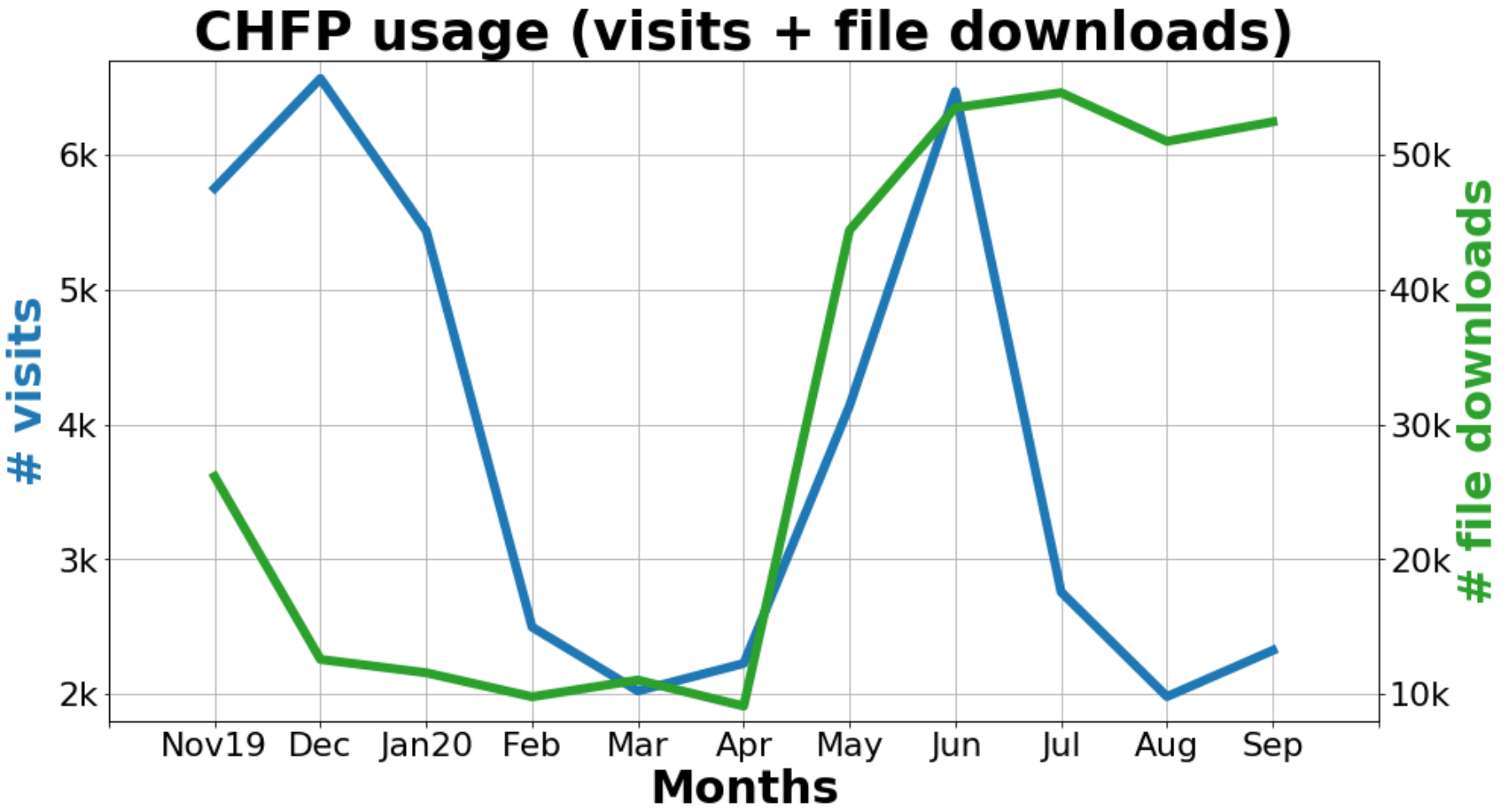


Taken from Jain et al. (2020)

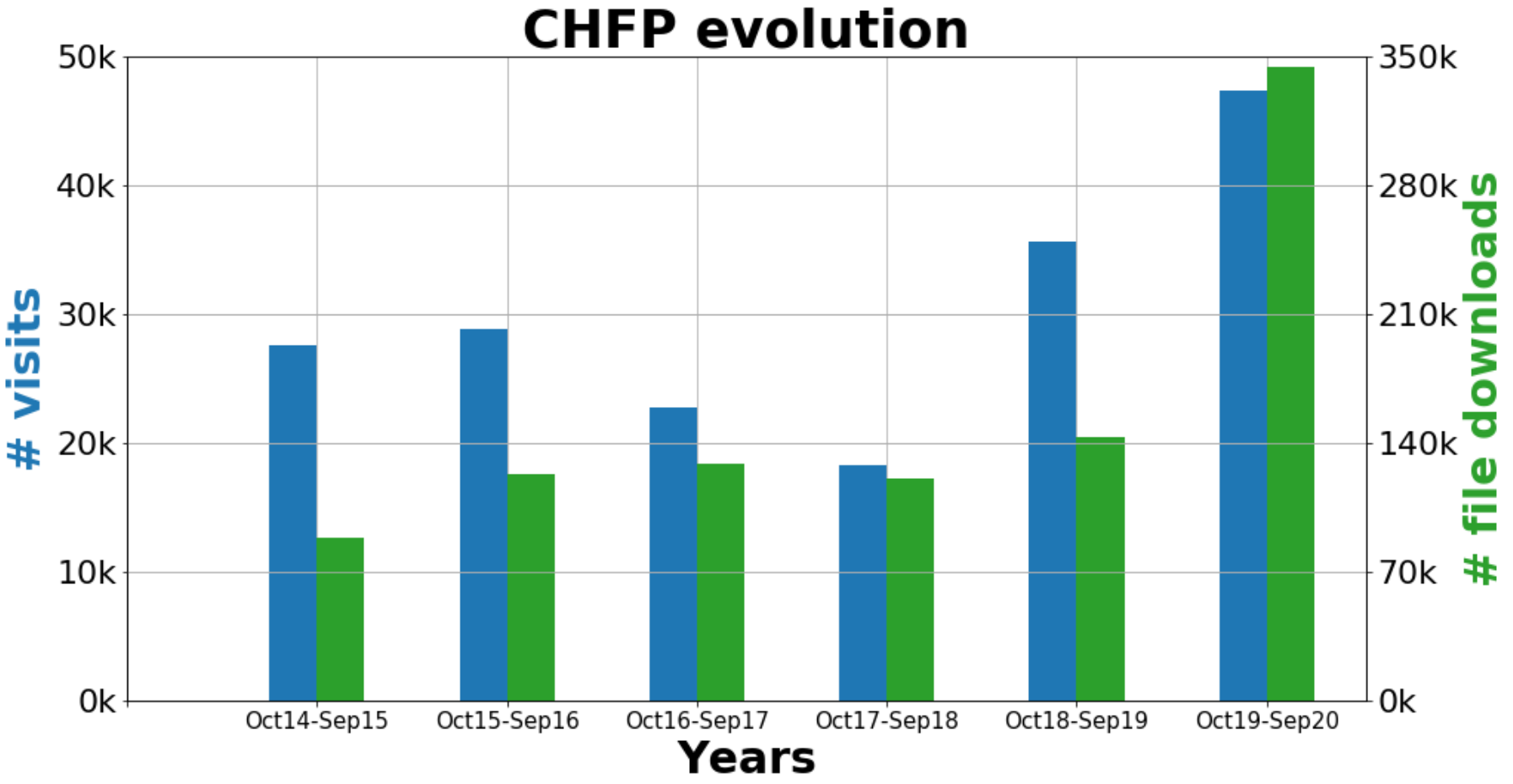
Main changes since the Moscow meeting

- ✓ Further increase in storage capacity: now only ~40% of the space devoted to CHFP at CIMA actually used
- ✓ Data from new Canadian models being added at present: CanCM4i and GEM-NEMO
- ✓ 235 active users (+30% since May 2019)
- ✓ Preferred files to download are monthly means (much more than daily fields)
- ✓ Little changes regarding progress on the ESFG node at CIMA --mostly due to prolonged lockdown since mid-March

Activity from Oct2019 to Sep2020



Evolution in CHFP usage (2014-2020)



(Ever increasing) list of papers using CHFP data

13. Jain, S., A. A. Scaife, N. Dunstone, D. Smith and S. K. Mishra, 2020: Risk Estimation of Unprecedented Monsoon Rainfall over India using Dynamical Ensemble Simulations. *Environ. Res. Lett*., https://doi.org/10.1088/1748-9326/ab7b98.

12. Tanessong, R.S., T. C. Fotso-Nguemo, A. J. K. Mbienda, G. M. Guenang, A. Tchakoutio Sandjon, S. Kaissassou and D. A. Vondou, 2020: Assessing Climate-system Historical Forecast Project (CHFP) seasonal forecast skill over Central Africa. *Theor. Appl. Climatol.,* https://doi.org/10.1007/s00704-020-03176-6.

11. Osman, M. and C. S. Vera, 2020: Predictability of extratropical upper-tropospheric circulation in the Southern Hemisphere by its main modes of variability. *J. Clim*., **33**, 1405–1421, https://doi.org/10.1175/JCLI-D-19-0122.1.

10. Jain, S., A. A. Scaife, and A. K. Mitra, 2019: Skill of Indian summer monsoon rainfall prediction in multiple seasonal prediction systems. *Climate Dyn.*, **52**, 5291–5301, https://doi.org/10.1007/s00382-018-4449-z.

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9. Scaife, A. A., L. Ferranti, O. Alves, P. Athanasiadis, J, Baehr, M, Déqué, T. Dippe, N. Dunstone, D. Fereday, R. G. Gudgel, R. J. Greatbatch, L. Hermanson, Y. Imada, S. Jain, A. Kumar, C. MacLachlan, W. Merryfield, W. A. Müller, H. L. Ren, D. M. Smith, Y. Takaya, G. Vecchi and X. Yang, 2019: Tropical rainfall predictions from multiple seasonal forecast systems. *Int. J. Climatol*., 39, 974-988, https://doi.org/10.1002/joc.5855.

8. Battisti, D. S., D. J. Vimont and B. P. Kirtman, 2019: 100 years of progress in understanding the dynamics of atmosphere–ocean variability. *A Century of Progress in Atmospheric and Related Sciences: Celebrating the American Meteorological Society Centennial*, *Meteor. Monogr.*, No. 59, Amer. Meteor. Soc., https://journals.ametsoc.org/doi/10.1175/AMSMONOGRAPHS-D-18-0025.1

7. Merryfield, W.J., F. J. Doblas-Reyes, L. Ferranti, J.-H. Jeong, Y. J. Orsolini, R. I. Saurral, A. A. Scaife, M. A. Tolstykh and M. Rixen, 2017: Advancing climate forecasting. Eos, **98**, 17–21, https://doi.org/10.1029/2017EO086891.

6. Gleixner S., N. S. Keenlyside, T. D. Demissie, F. Counillon,Y. Wang and E. Viste E, 2017: Seasonal predictability of Kiremt rainfall in coupled general circulation models. *Environ. Res. Lett*., **12,** 114016, https://doi.org/10.1088/1748-9326/aa8cfa.

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5. Tompkins, A. M., M. I. O. D. Zárate, R. I. Saurral, C. Vera, C. Saulo, W. J. Merryfield, M. Sigmond, W.-S. Lee, J. Baehr, A. Braun, A. Butler, M. Déqué, F. J. Doblas-Reyes, M. Gordon, A. A. Scaife, Y. Imada, M. Ishii, T. Ose, B. Kirtman, A. Kumar, W. A. Müller, A. Pirani, T. Stockdale, M. Rixen, and T. Yasuda, 2017: The Climate-System Historical Forecast Project: Providing open access to seasonal forecast ensembles from centers around the globe. *Bull. Amer. Meteor. Soc.*, **98**, 2293–2301, https://doi.org/10.1175/BAMS-D-16-0209.1.

4. Osman, M., and C. S. Vera, 2017: Climate predictability and prediction skill on seasonal time scales over South America from CHFP models. *Climate Dyn.*, **49**, 2365–2383, https://doi.org/10.1007/s00382-016-3444-5.

3. Butler, A. H., A. Arribas, M. Athanassiadou, J. Baehr, N. Calvo, A. Charlton-Perez, M. Déqué, D. I. V. Domeisen, K. Fröhlich, H. Hendon, Y. Imada, M. Ishii, M. Iza, A. Y. Karpechko, A. Kumar, C. MacLachlan, W. J. Merryfield, W. A. Müller, A. O'Neill, A. A. Scaife, J. Scinocca, M. Sigmond, T. N. Stockdale, and T. Yasuda, 2016: The climate-system historical forecast project: Do stratosphere-resolving models make better seasonal climate predictions in boreal winter? *Quart. J. Roy. Meteor. Soc.*, **142**, 1413–1427, https://doi.org/10.1002/qj.2743.

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2. Osman, M., C. S. Vera, and F. J. Doblas-Reyes, 2016: Predictability of the tropospheric circulation in the Southern Hemisphere from CHFP models. *Climate Dyn.*, **46**, 2423–2434, https://doi.org/10.1007/s00382-015-2710-2.

1. Kirtman, B. and A. Pirani, 2009: The State of the Art of Seasonal Prediction Outcomes and Recommendations from the First World Climate Research Program (WCRP) Workshop on Seasonal Prediction, *Bull. Amer. Meteor. Soc.*, **90**, https://doi.org/10.1175/2008BAMS2707.1

What's next?

- ✓ Inclusion of two new Canadian models (one already added)
- ✓ Centers are very welcome to submit new data -- either in the form of new models, or new sets of hindcasts for existing models
- ✓ Focus should be put mostly on monthly fields: they are significantly lighter and much more frequently downloaded
- ✓ Current bottleneck at CIMA related to personnel in charge of CHFP.
- ✓ Bill Merryfield currently helping to establish a "pipeline" for processing monthly data from WMO GPC models (in progress)

Thanks!