Supplements of

Regionally optimized fire parameterizations using feed-forward neural networks

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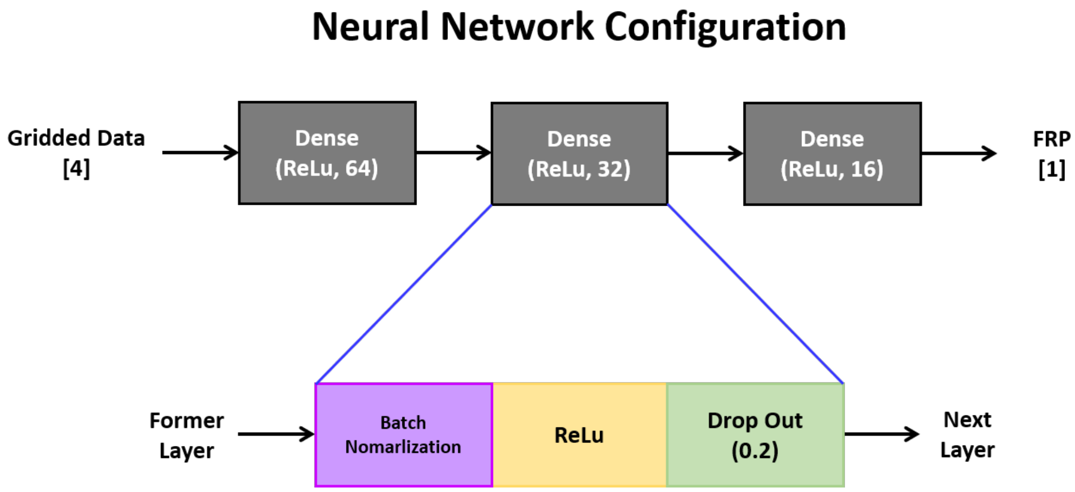
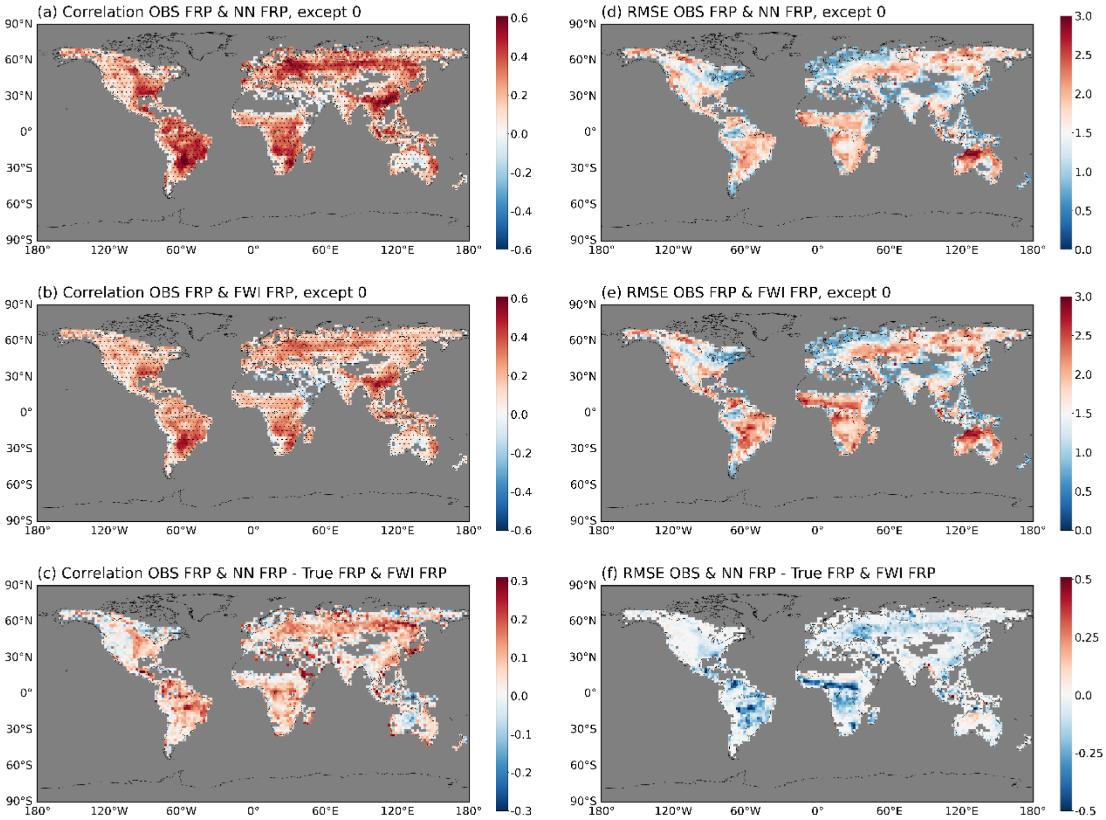
	EXP1	EXP2	EXP3	EXP4	EXP5
Training	2005–2018	2009–2020 & 2001–2002	2013–2020 & 2001–2006	2017–2020 & 2001–2010	2001–2014
Validation	2019–2020	2003–2004	2007–2008	2011–2012	2015–2016
Testing	2001–2004	2005–2008	2009–2012	2013–2016	2017–2020

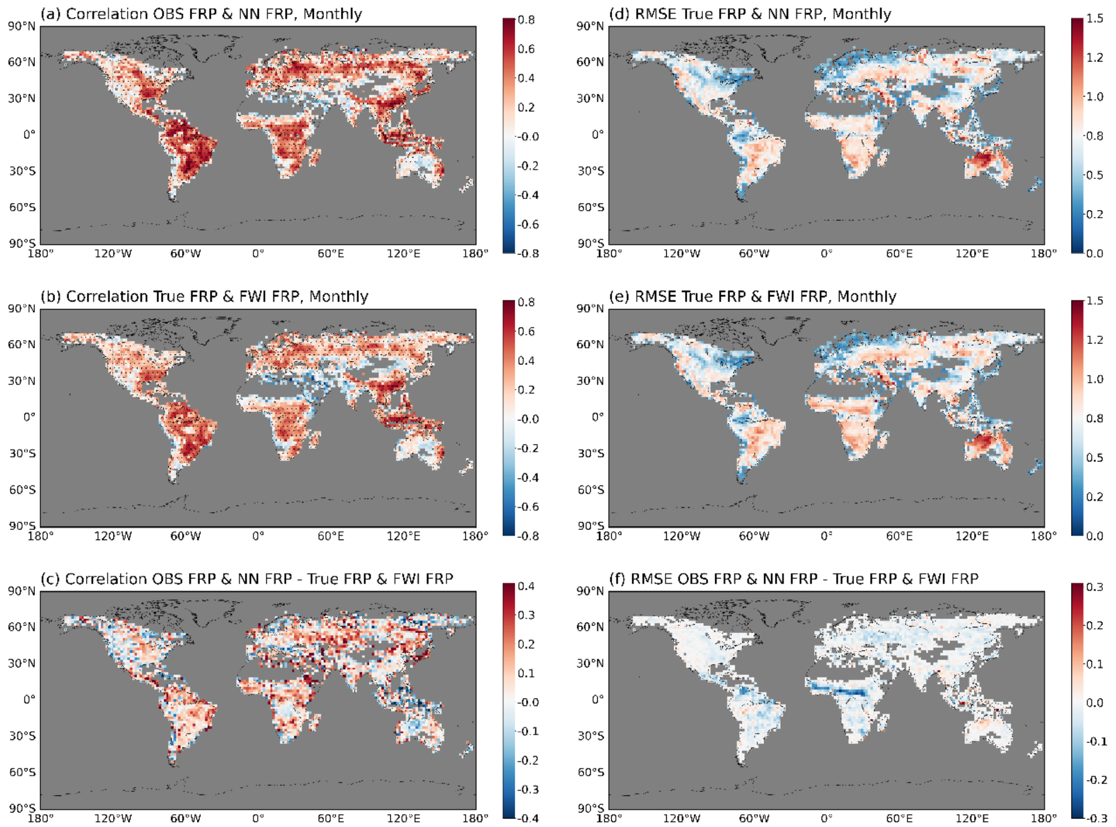
Supplementary Table S1. Periods for the training, validation, and testing of the FFNNs.



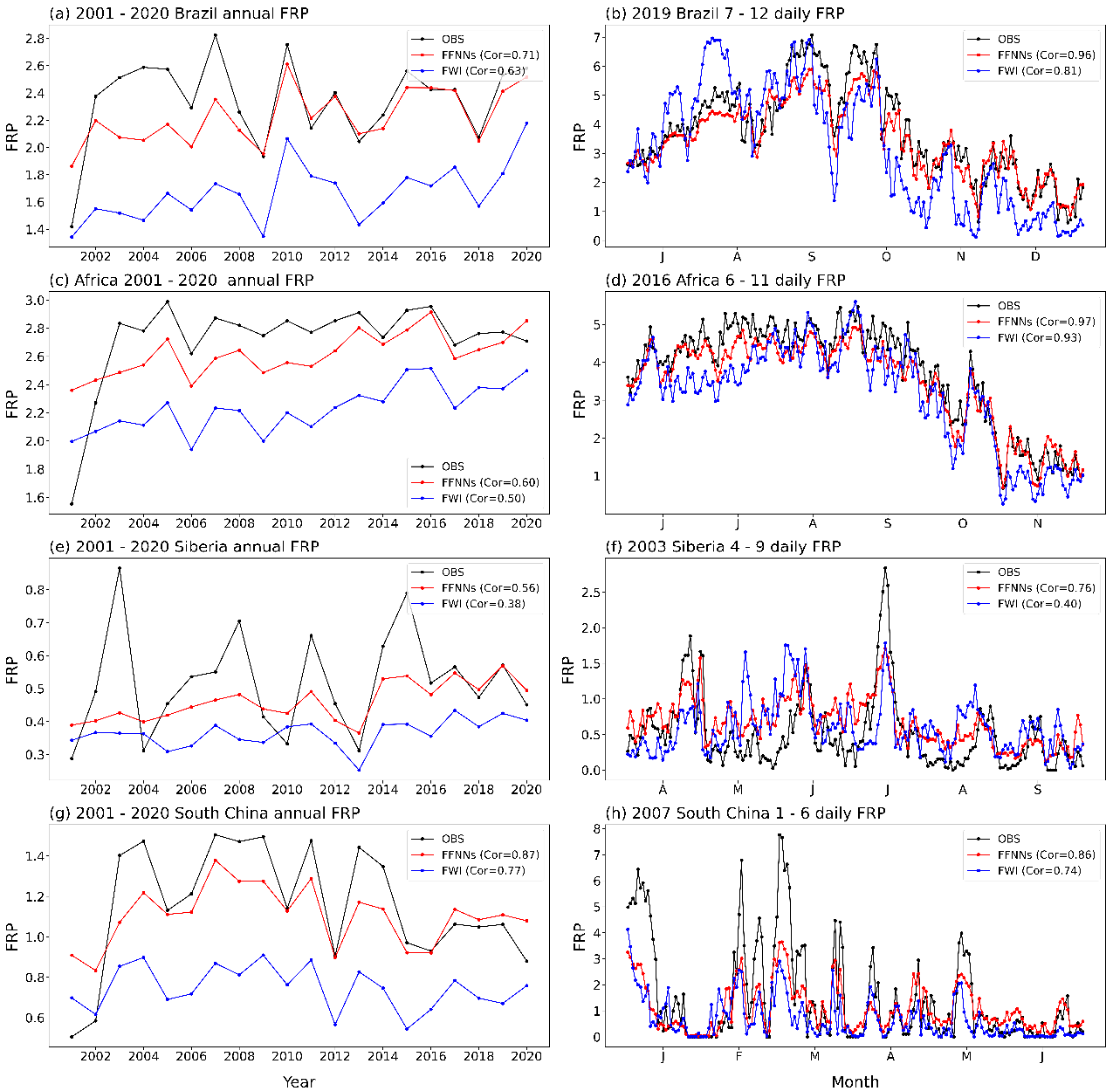
Supplementary Fig. S1. Configuration of the FFNNs.



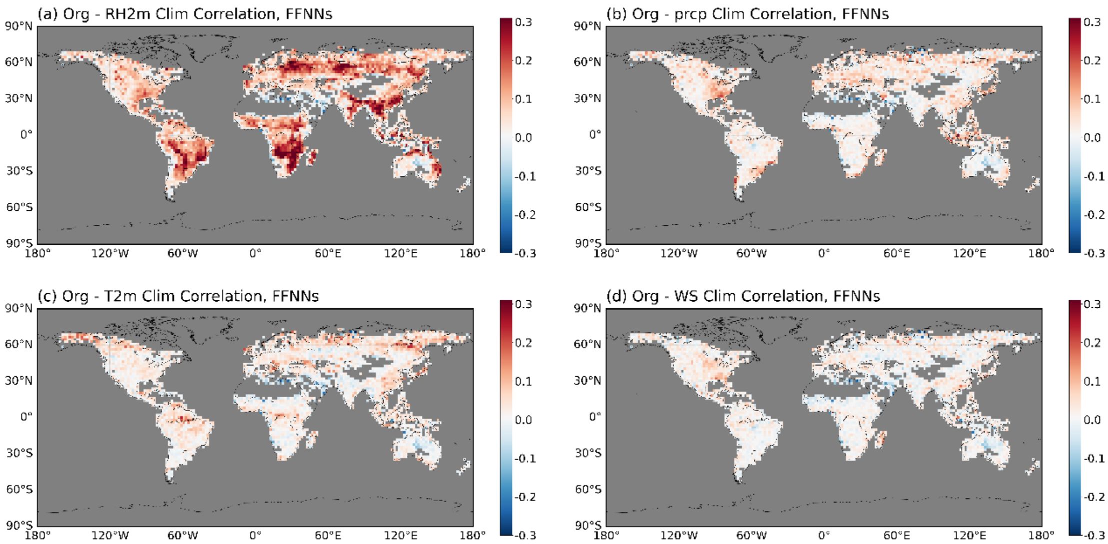
Supplementary Fig. S2. Same as main Fig. 2, but for cases where the observed FRP > 0.



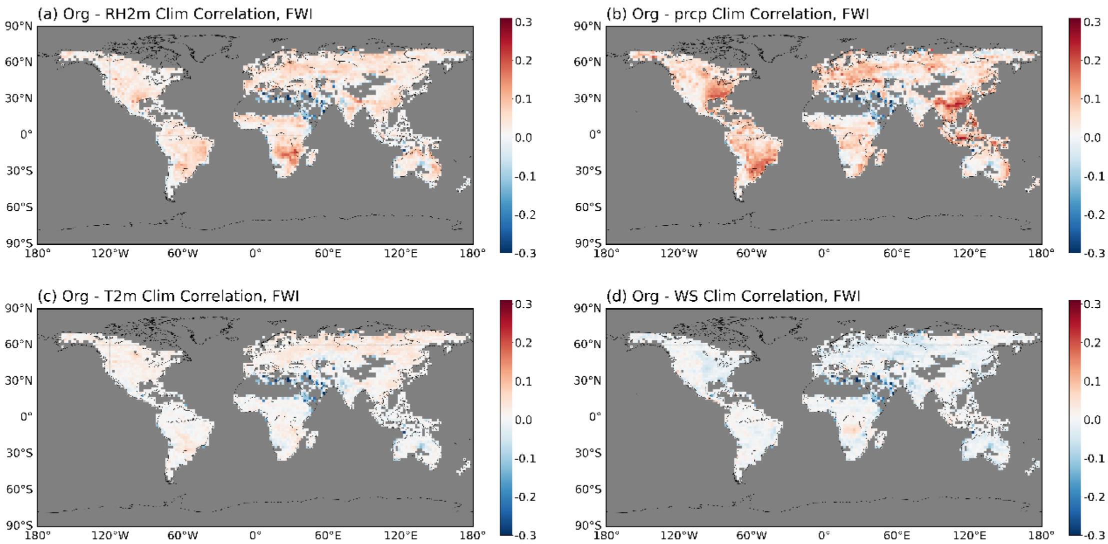
Supplementary Fig. S3. Same as main Fig. 2, but using monthly-averaged FRP.



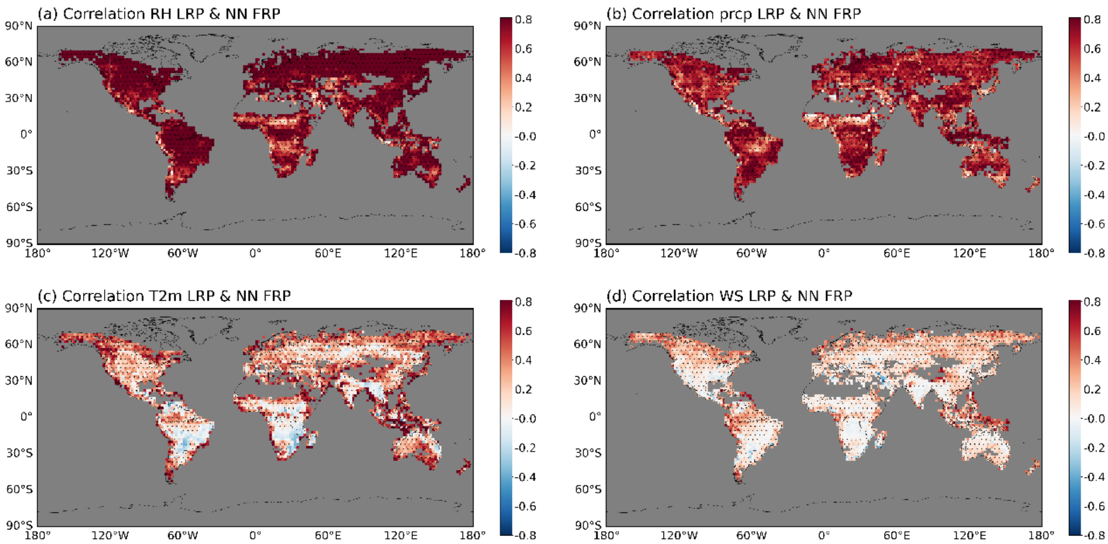
Supplementary Fig. S4. Time series of the annually-averaged (left) and daily (right) FRP in the observation (black), FFNNs (red), and FWI-based model (blue) over (a), (b) Brazil (64–40°W, 21–1°S), (c), (d) southern Africa (14–36°E, 18°S–6°N), (e), (f) Siberia (104–134°E, 48–60°N), and (g), (h) southern China (108–120°E, 22°N–30°N). Correlation coefficient between the observation and the FFNNs, and FWI-based model is denoted by the red, and blue in each panel, respectively.



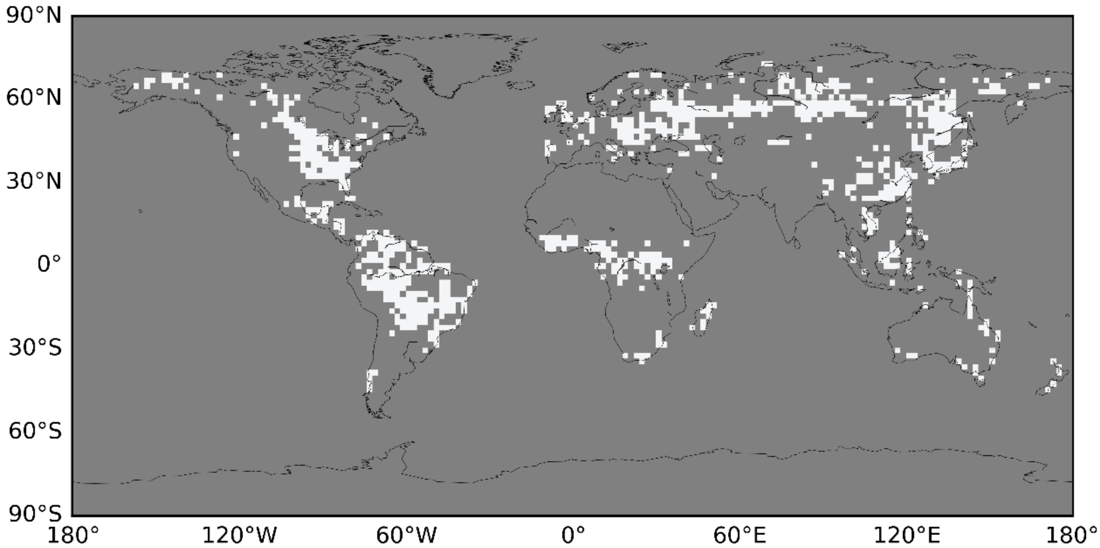
Supplementary Fig. S5. Difference in the correlation skill of the original FRP estimation in the FFNNs from that by using (a) the RH2m, (b) PRCP, (c) T2m, and (d) WS10m as the daily climatological values.



Supplementary Fig. S6. Difference in the correlation skill of the original FRP estimation in the FWI-based model from that by using (a) the RH2m, (b) PRCP, (c) T2m, and (d) WS10m as the daily climatological values.



Supplementary Fig. S7. Correlation skill between the daily layer-wise relevance propagation (LRP) map and the estimated FRP in the FFNNs during the 2001–2020 period.



Supplementary Fig. S8. Grid points selected for bin-averaged FRP calculation in Fig. 3 and Fig. 4, satisfying the following three conditions: (1) FRP correlation skill improvement in FFNNs over the FWI-based model greater than 0.1, (2) RH2m being the most influential meteorological variable for FRP estimation in FFNNs, and (3) PRCP being the most influential meteorological variable for FRP estimation in the FWI-based model.