Table 1. Raster inputs (these have been accessed in June 2018 unless noted otherwise)

Data	Details	Source
Crop yield and harvested area	5 arcmin, 175 crops-same as GTAP, circa 2000, area provided as fraction of land area in grid cell	Monfreda et al., 2008; http://www.earthstat.org/data-download/
Cropland physical extent	5 arcmin, circa 2000, provided as fraction of land area in grid cell	Ramankutty et al., 2008; http://www.earthstat.org/data-download/
Irrigated and rainfed crop harvested area	5 arcmin, hectares, 26 crop classes, circa 2000	Portmann et al., 2010; https://www.uni-frankfurt.de/45218031/data_download/
Crop water footprint data	5 arcmin, mm/yr, 18 crop types, 3 water types, circa 2000	Mekonnen and Hoekstra, 2011; http://waterfootprint.org/en/resources/waterstat/product-water-footprint-statistics/
Fraction of land area in grid cell for crop and water footprint data above	5 arcmin, spherical earth with WGS84 mean radius	D. Plouff and N. Ramankutty provided these data corresponding to the above cropland data (in late 2013). Note that these are the same data used to provide the area values in the current crop yield and harvested area data above
Potential vegetation	5 arcmin, thematic, 15 vegetation types, circa 2000 if no historical land use had occurred	Ramankutty and Foley, 1999; http://www.earthstat.org/data-download/

Land use area	5 arcmin, km^2, 1700-2016 (decadal up to 2000), HYDE 3.2.000 baseline, 12 land use types	Klein Goldewijk et al., 2017; ftp://ftp.pbl.nl/hyde/hyde3.2/2017_beta_release/
Land area in grid cell	5 arcmin, km^2, circa 2000, spherical earth with WGS84 mean radius, with Greenland and several arctic islands added based on fraction of land area in grid cell for crop area and potential vegetation; this is the working grid	Klein Goldewijk et al., 2017; ftp://ftp.pbl.nl/hyde/hyde3.2/2017_beta_release/
Total grid cell area	5 arcmin, km^2, spherical earth with WGS84 mean radius, with Greenland and several arctic islands added based on fraction of land area in grid cell for crop area and potential vegetation; this is the working grid	Klein Goldewijk et al., 2017; ftp://ftp.pbl.nl/hyde/hyde3.2/2017_beta_release/
234 Country boundaries	5 arcmin, from VMAP0 vector data (the source of FAO country boundaries), added East Timor based on a map, and merged some countries to reflect FAO data	VMAP0: http://gis.ess.washington.edu/data/raster/GlobalData/ (last accessed in 2013, now restricted to UW, but these data are currently available in four parts at http://gis-lab.info/qa/vmap0-eng.html);

Original AEZ boundaries	5 arcmin, 1961-1990 data, 160 country boundaries, GTAP Land Use Database, Release 2.1	Lee et al., 2005; Lee et al., 2009; Monfreda et al., 2009; https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=1900
Output Geographic Land Unit (GLU) boundaries	5 arcmin, thematic, 235 water basins	Developed for the water module of the Global Change Assessment Model, aggregated from a 1/8-degree global watershed data set; updated 30 Sep 2017
Land cover area data	half-degree, 1800-2016 (decadal up to 2000), 23 land cover types, fraction of grid cell and grid cell area	Produced specifically for Moirai using HYDE 3.2.000 data; http://climate.atmos.uiuc.edu/atuljain/availabledata.html; Previous public version available here: https://www.atmos.illinois.edu/~meiyappp2/datasets.htm (Meiyappan and Jain, 2012)
Soil carbon data – SoilGrids 2.0	250 m, circa 2010, 0-30 cm, MgC/ha, aggregated to 5 arcmin, six carbon states provided based on the aggregation	Hengl, T., Mendes de Jesus, J., Heuvelink, G. B., Ruiperez Gonzalez, M., Kilibarda, M., Blagotić, A., ... & Guevara, M. A. (2017). SoilGrids250m: Global gridded soil information based on machine learning. PLoS one, 12(2), e0169748; https://www.isric.org/explore/soilgrids ; downloaded Ocotber 2020
Soil carbon data - FAO harmonized world soil database v1.2	30 arcsec, circa 2010, 0-30 cm, MgC/ha, aggregated to 5 arcmin,	Fischer, G., F. Nachtergaele, S. Prieler, H.T. van Velthuizen, L. Verelst, D. Wiberg, 2008. Global Agro-ecological Zones Assessment for Agriculture (GAEZ 2008). IIASA, Laxenburg, Austria

	6 carbon states provided based on the aggregation	and FAO, Rome, Italy; http://www.fao.org/soils-portal/soil-survey/soil-maps-and-databases/harmonized-world-soil-database-v12/en/; downloaded October 2020
Vegetation carbon data	300m, circa 2010, above and below ground, MgC/ha, aggregated to 5 arcmin, 6 carbon states provided based on the aggregation	Spawn, S.A., Sullivan, C.C., Lark, T.J. et al. Harmonized global maps of above and belowground biomass carbon density in the year 2010. Sci Data 7, 112 (2020); https://doi.org/10.1038/s41597-020-0444-4; downloaded July 2020
Suitable and protected land area	300m, 6 thematic categories, aggregated to 5 arcmin as fraction of grid cell in each category	Provided Jan 2020 by researchers at U.S. Environmental Protection Agency (EPA) in support of research with the Global Change Analysis Model (GCAM); Contact Aaron Sobel (Sobel.Aaron@epa.gov) for availability, and see .../moirai/docs/third_party_contributions_v31.pdf for original data sources and their citations