

CropWatch online resources:

A. Definition of spatial units



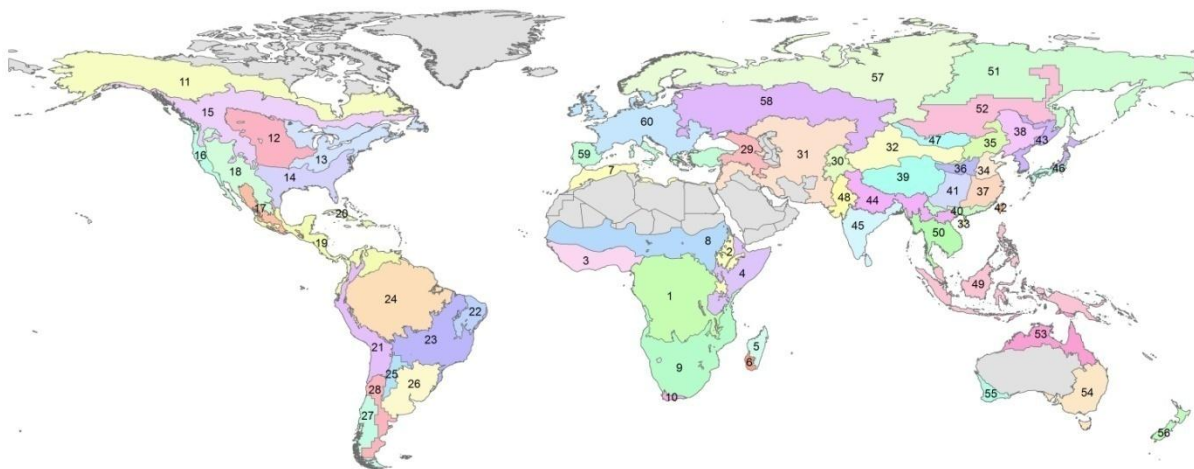
[[updated Feb. 28 2014]]

CropWatch analyses use a hierarchical approach with different indicators for different spatial scales. The four organizational levels used for CropWatch are the (i) Crop Production System Zones (CPSZ) for global-level analyses, (ii) Major Production Zones (MPZ) for regional analyses, (iii) individual countries, and (iv) sub-national levels (for large countries only). The location, choice, and boundaries for each are described below. (For more details about country boundaries, see also the [Online Resource: Methodology](#).)

1. Crop Production System Zones

Sixty Crop Production System Zones (CPSZ) are used to support global analysis, mostly for environmental indicators, and support analysis at higher levels. Figure 1 and table 1 locate the sixty zones and provide a quick overview of some relevant physiographic and agriculturally relevant variables. The numbers on the map correspond with the numbers in the table.

Figure 1 Global map of the sixty Crop Production System Zones



The main basis for the delineation of the CPSZs is the global ecological map prepared in the ambit of the FAO Forest Resources Assessment (1), further subdivided when necessary or otherwise modified based mainly on Köppen climate zones (the digital maps from Grieser et al. (2), VASCLimO 1976-2000 data), “the most suitable cereal” grids available from the Global Agroecological Zones project(3). Other sources include USDA (4), Ramkutty’s Global distribution of cultivable lands (5) and Monfreda et al. (6).

A special mention is needed about China, where the zones were not derived using the same approach, but cover standard Chinese agroecological zones (published in Chinese by Sun He (7); an English language description can be found in Hu Zizhi and Zhang Degang (8).

Table 1 Physiographic and agricultural characteristics of Crop Production System Zones

	Long name	Area (kkm ²)	Altitude above sea level (m) ^a	Total annual rainfall (mm) ^a	Avg. temp ^a	Season ^a	Crop-I and % ^b	Irrigation % ^c	NPPP (tons/ ha) ^d	Vlx ^e
1	Equatorial central Africa	7500	807	1437	23.3	EQ	5.3	1.3	1.63	0.66
2	East African highlands	800	1818	1070	19.1	CoWi	24.5	3.1	1.42	0.57
3	Gulf of Guinea	2300	281	1501	26.4	EQ	23.6	1.7	1.69	0.56
4	Horn of Africa	2400	680	440	25.3	WaSu	4.0	4.2	0.91	0.31
5	Madagascar (main)	600	594	1580	22.6	WaSu	6.9	4.9	1.85	0.67
6	SW Madagascar	200	357	692	23.8	WaSu	2.1	3.1	1.26	0.62
7	North Africa Mediterranean	1100	721	349	16.6	CoWi	30.3	15.4	0.59	0.31
8	Sahel	5800	417	464	27.7	WaSu	14.3	11.3	0.72	0.40
9	Southern Africa	5700	880	595	20.6	WaSu	6.6	3.8	0.91	0.53
10	S. Africa Western Cape	100	527	475	15.9	CoWi	16.7	8.7	0.70	0.52
11	Boreal North America	11000	494	422	-5.9	WaSu	0.3	0.1	0.37	0.69
12	America northern great plains	3400	687	531	7.1	WaSu	47.2	3.7	0.84	0.60
13	America corn belt	3600	292	999	6.7	WaSu	21.6	0.7	1.09	0.83
14	America cotton belt-Mexican coastal plain	2900	290	1069	17.0	WaSu	20.7	4.8	1.41	0.67
15	Sub-boreal North America	6900	874	672	0.5	WaSu	4.7	3.6	0.63	0.70
16	America West Coast	700	744	976	11.1	CoWi	12.9	14.7	1.02	0.59
17	Sierra Madre	800	1738	781	17.6	WaSu	13.6	13.2	1.12	0.65
18	SW Mexico and N. Mexico highlands	2900	1303	293	13.9	WaSu	6.9	7.5	0.52	0.29
19	Northern South and Central America	2500	346	1885	25.2	EQ	12.9	4.6	1.83	0.72
20	Caribbean	300	200	1391	24.7	WaSu	30.9	10.4	1.61	0.77
21	Central-Northern Andes	2200	2621	805	13.2	WaSu	3.6	3.7	0.96	0.38
22	Brazil Nordeste	1000	417	754	24.5	WaSu	5.8	0.8	1.22	0.61
23	Central-Eastern Brazil	4500	438	1368	23.8	EQ	13.0	0.7	1.75	0.72
24	Amazon	7500	206	2317	25.8	EQ	1.9	0.3	2.18	0.80
25	Central-North Argentina	600	347	668	20.8	WaSu	7.1	5.3	1.19	0.70
26	SE Brazil-Concepcion-Bahia Blanca	2500	218	1148	18.1	WaSu	22.8	1.7	1.58	0.72
27	SW Southern Cone	1400	744	935	8.0	CoWi	2.0	17.5	0.97	0.50
28	Semi-arid Southern Cone	1400	1024	236	11.5	WaSu	1.0	7.5	0.51	0.26
29	Caucasus	1500	1224	583	9.7	CoWi	32.6	16.9	0.86	0.43
30	Central Asia Pamir mountains	900	2618	514	5.5	CoWi	15.0	17.7	0.65	0.42
31	Western Asia	7400	559	207	12.8	CoWi	8.3	21.2	0.39	0.26
32	China Gansu-Xinjiang	3400	1739	113	5.8	WaSu	2.7	18.1	0.20	0.17
33	China Hainan	40	197	1500	24.0	WaSu	19.4	6.2	1.86	0.77
34	China Huang Huaihai	600	91	656	13.3	WaSu	57.2	38.5	1.02	0.73

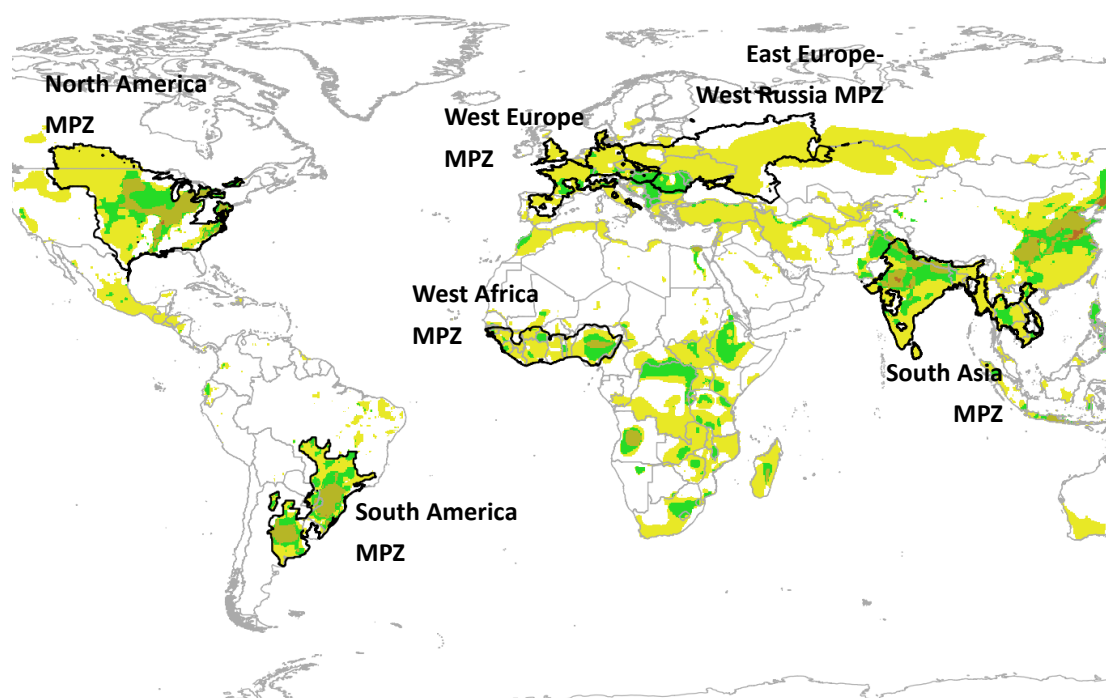
	Long name	Area (kkm ²)	Altitude above sea level (m) ^a	Total annual rainfall (mm) ^a	Avg. temp ^a	Season ^a	Crop-l and % ^b	Irrigation % ^c	NPPP (tons/ ha) ^d	Vix ^e
35	China Inner Mongolia	1300	976	366	3.3	WaSu	13.5	13.4	0.59	0.53
36	China Loess region	600	1355	523	8.8	WaSu	32.0	17.1	0.79	0.58
37	China Lower Yangtze	1300	258	1421	16.9	WaSu	27.1	22.4	1.72	0.73
38	North East China	1600	386	577	1.5	WaSu	24.3	10.5	0.70	0.81
39	China Qinghai-Tibet	3100	4390	384	-1.3	WaSu	0.4	4.2	0.49	0.34
40	Southern China	600	682	1519	20.1	WaSu	16.0	11.8	1.82	0.67
41	South-West China	1300	1234	1090	14.5	WaSu	19.3	11.2	1.41	0.70
42	Taiwan	45	792	2536	19.1	WaSu	12.0	21.6	2.01	0.73
43	East Asia	1100	377	991	4.2	WaSu	10.9	13.0	0.92	0.82
44	Southern Himalayas	2500	993	1426	20.2	WaSu	35.9	26.2	1.61	0.60
45	Southern Asia	1900	349	1262	26.3	EQ	56.3	21.0	1.59	0.52
46	Southern Japan and Korea	300	318	1864	13.4	WaSu	13.2	21.4	1.64	0.75
47	Mongolia region	1100	1491	118	2.7	WaSu	0.0	1.4	0.24	0.17
48	S. Asia Punjab to Gujarat	1000	216	458	25.7	WaSu	54.2	33.8	0.79	0.38
49	SE Asia islands	3400	373	2821	25.0	EQ	17.7	13.0	2.30	0.77
50	SE Asia mainland	1700	276	1844	25.7	EQ	27.6	12.5	1.99	0.65
51	Eastern Siberia	14100	416			WaSu	0.0	0.0	0.00	0.00
52	Eastern Central Asia	5400	1034	408	-5.5	WaSu	2.4	1.9	0.36	0.67
53	North Australia	2100	209	938	25.7	WaSu	2.8	0.7	1.29	0.55
54	Australia Queensland to Victoria	2300	276	640	17.0	WaSu	19.3	2.2	0.90	0.57
55	Australia Nullarbor-Darling	400	248	473	17.2	CoWi	45.6	0.2	0.74	0.64
56	New Zealand	400	495	1668	10.3	CoWi	1.7	2.9	1.32	0.71
57	Boreal Eurasia	18200	264	485	-5.5	WaSu	1.1	0.9	0.42	0.72
58	Ukraine to Kazakhstan	11000	278	498	3.7	WaSu	26.9	2.4	0.75	0.64
59	Mediterranean Europe and Turkey	1800	691	634	13.0	CoWi	32.4	10.2	0.99	0.47
60	W. Europe (non-Mediterranean)	5500	336	775	9.1	WaSu	33.9	7.3	1.09	0.67

Note: Area is approximate and expressed in thousands of square kilometers, derived from the shapefile. Altitude is the average altitude in meters above sea level. Avg. temp is the average annual temperature (°C). Season is the type of rainy season: EQ, stands for equatorial, characterized by an average annual temperature in excess of 22°C, an annual thermal amplitude below 3°C and rainfall in excess of 1000mm. Equatorial climates are characterized by an all-year-round wet growing season, potentially high cropping intensities and crops such as rubber, cocoa and oil palm. CoWi indicates that the cold season is also the wet season. Because of altitude, the cold season does not always correspond to the local winter. WaSu indicates that the wettest and the warmest months coincide. The season type was derived based on data from (102). Cropland% is the average percent cropland (103) and Irrigation% is the percentage of the area that is equipped for irrigation (104). NPPP is the plant biomass (=net primary production) potential in tons of dry matter per ha according to the Miami model, based on 1976-2000 VasClimo data (71, 105, 106.). Vix is the maximum of the average February and August Spot Vegetation NDVI.

2. Major Production Zones

The Major Production Zones (MPZs) are used for regional analyses. While the first CropWatch bulletin only used four zones, this was expanded to the current six: West Africa, North America, South America, South and Southeast Asia, Central Europe and Western Russia, and Western Europe. The zones are selected based essentially on a combined maize, rice, soybean and wheat distribution raster map based on JRC crop masks. For the areas of interest, each MPZ includes the area where at least one of the four crops is cultivated, bounded either by the area where none of the four crops is cultivated or by national or sub-national political boundaries. In one instance (central Europe and W. Russia), the northern limit was taken to coincide with CPSZ 59 (“Ukraine to Kazakhstan”) and the eastern limit is given by the Ural Mountains. Figure 2 illustrates the six MPZs.

Figure 2. Map of the CropWatch Major Crop Production zones



Note: Figures shows only maize, rice, soybean and wheat. White background: none of the four crops is grown; light green: only one crop is grown; bright green: two crops are grown; dark green: three crops; brown: all four crops; very few areas cultivate all four crops (mostly in India).

3. Countries and sub-national administrative areas

The selection of countries was done based on statistics published by FAO on production and trade, to include 80 percent of both. Several countries near the “end” of the list were included based on other considerations, e.g., their location in Asia (such as Uzbekistan) or in Africa (Ethiopia). Some generic information about the countries and their agriculture is provided in the ‘Online Resource: Country Profiles.’

Large countries For some of the largest countries (Argentina, Australia, Brazil, Canada, China, India, Kazakhstan, Russia, and the United States), the first level administrative units were included in the analyses.

China For China, 24 province-level subdivisions are covered in the report, divided into seven official geographic regions, namely North-East Region, Inner Mongolia, Huanghuaihai, Loess Region, Lower Yangtze Region, South-West China, and Southern China (9).

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