



PHASE-2 PROPOSED REFERENCE SITES

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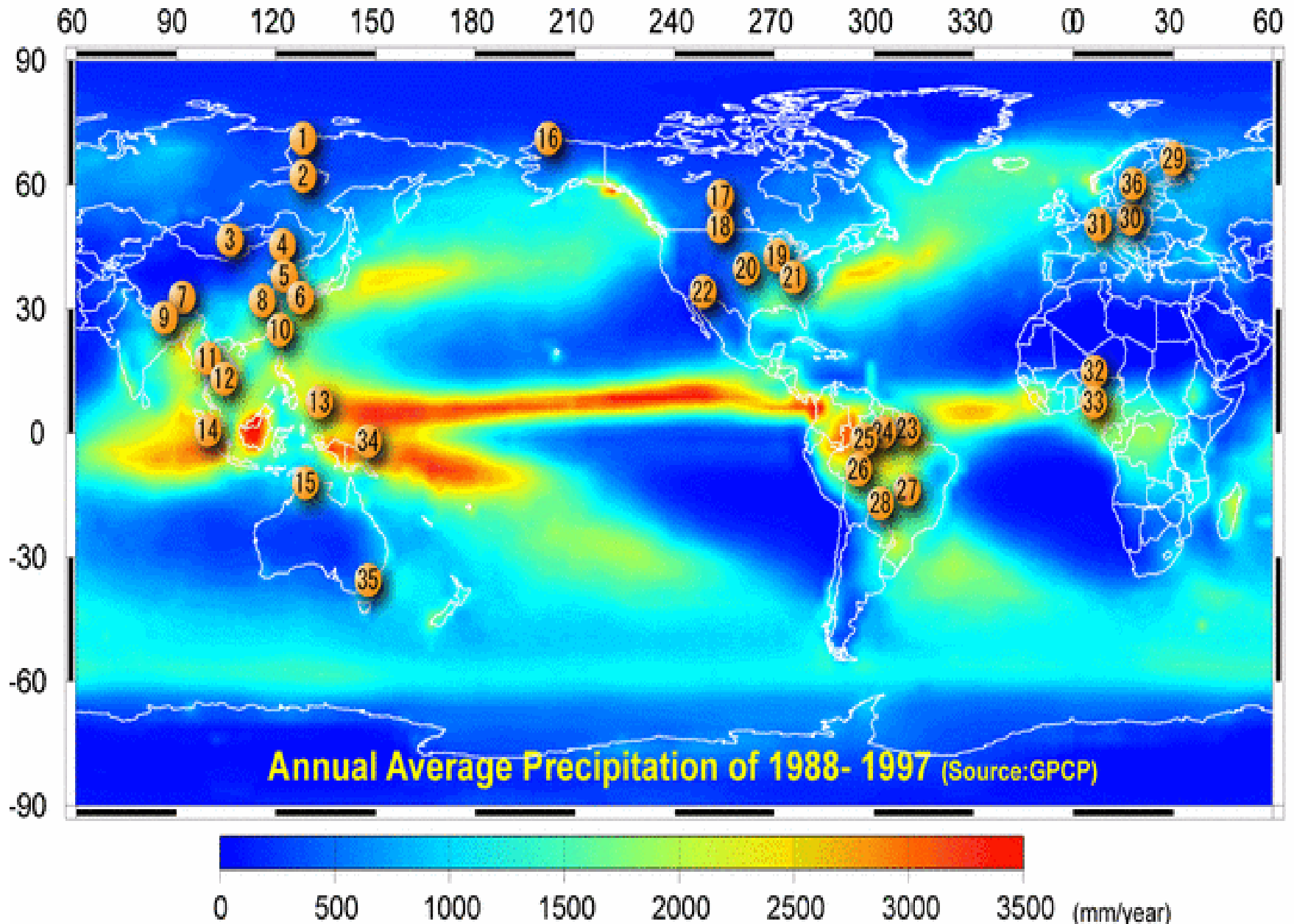


**1st Pan-GEWEX Meeting
ESA/ESRIN Frascati, Italy
9-13 October 2006**





PHASE-1 REFERENCE SITE LOCATIONS



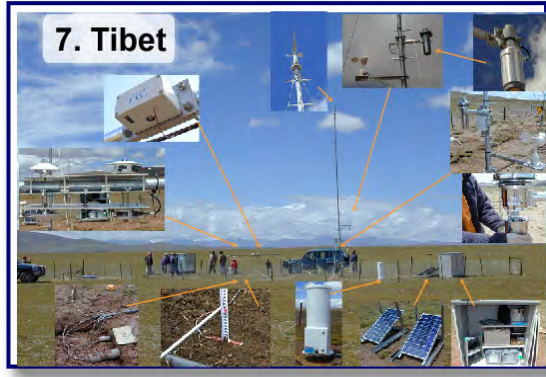


PHASE-2 REFERENCE SITE REQUIREMENTS

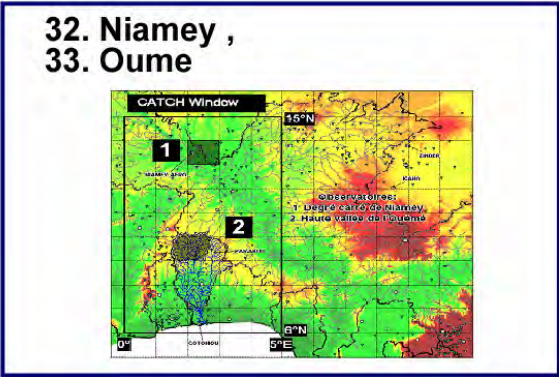
All Reference Sites must:

- Provide commitment for participation
- Provide required metadata/site descriptions
- Abide by CEOP Data Policy
- Perform format conversions and quality control*
- **MUST MEET DELIVERY SCHEDULE!**

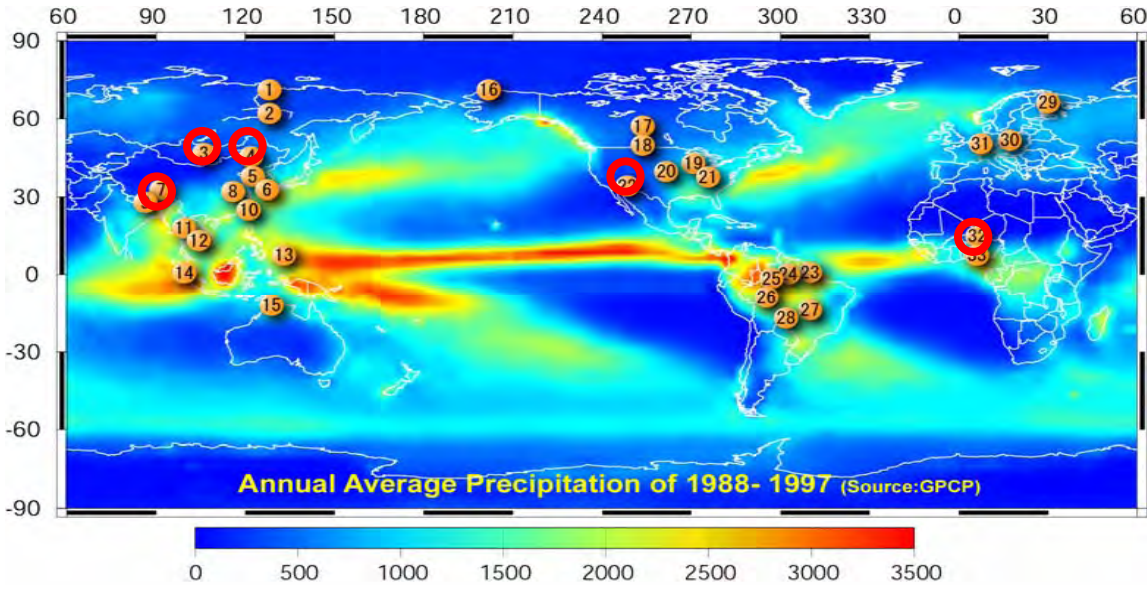
- *May use CAMP Data System*

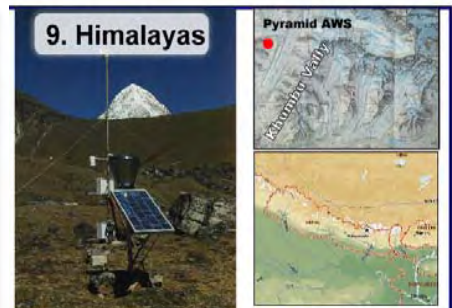
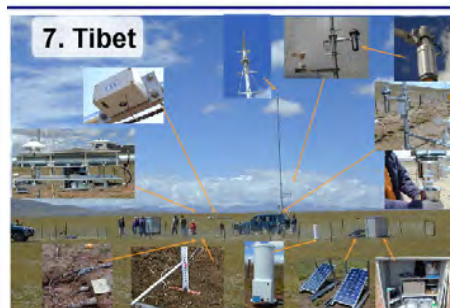
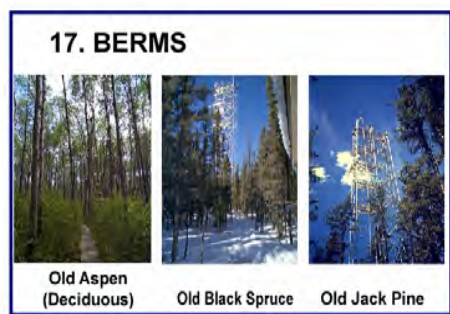


possible candidates
China, Tunisia, Mexico,



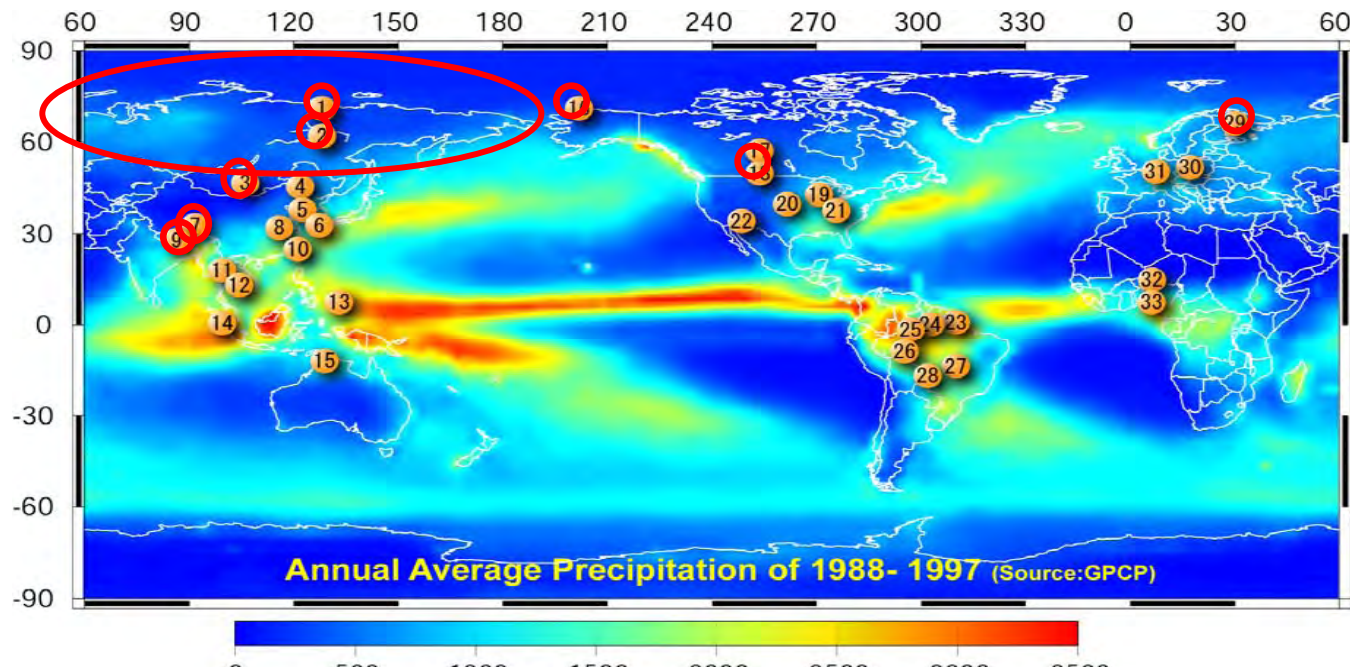
CEOP Reference Site
 in the **Semi-arid Regions**



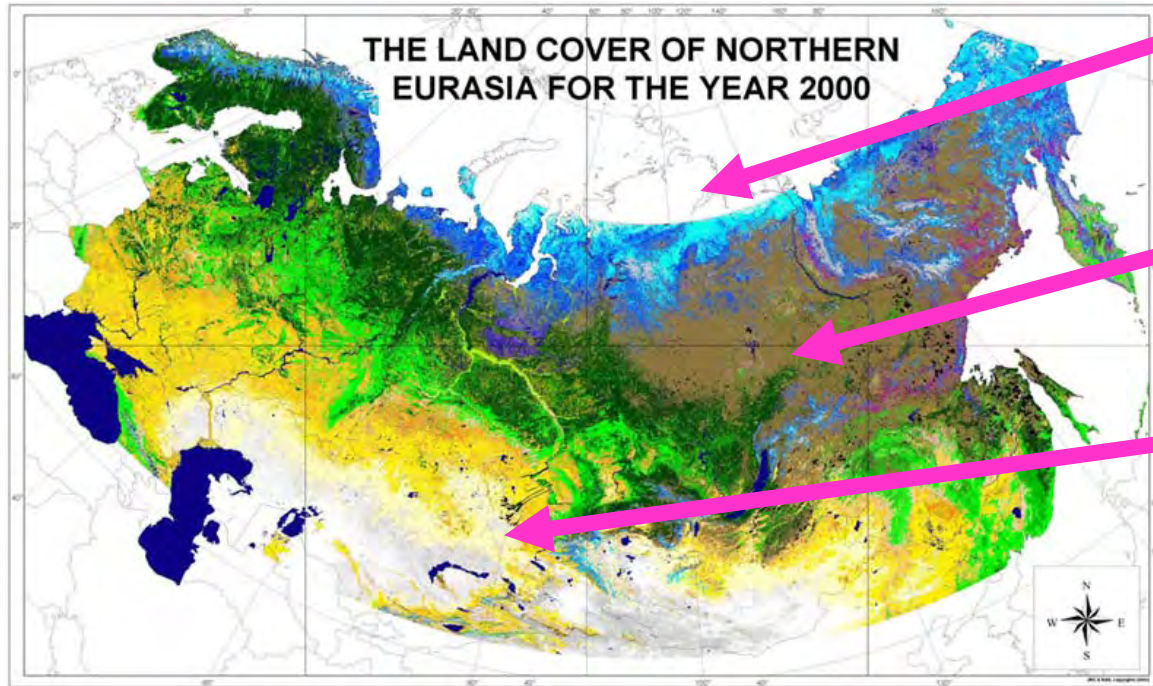


CEOP Reference Site
in the **Cold Regions**

Additional candidate:
NEESPI ?



NEESPI: The Northern Eurasia Earth Science Partnership Initiative



The world's largest cold region.

Area stores more than half of the Earth's terrestrial carbon.

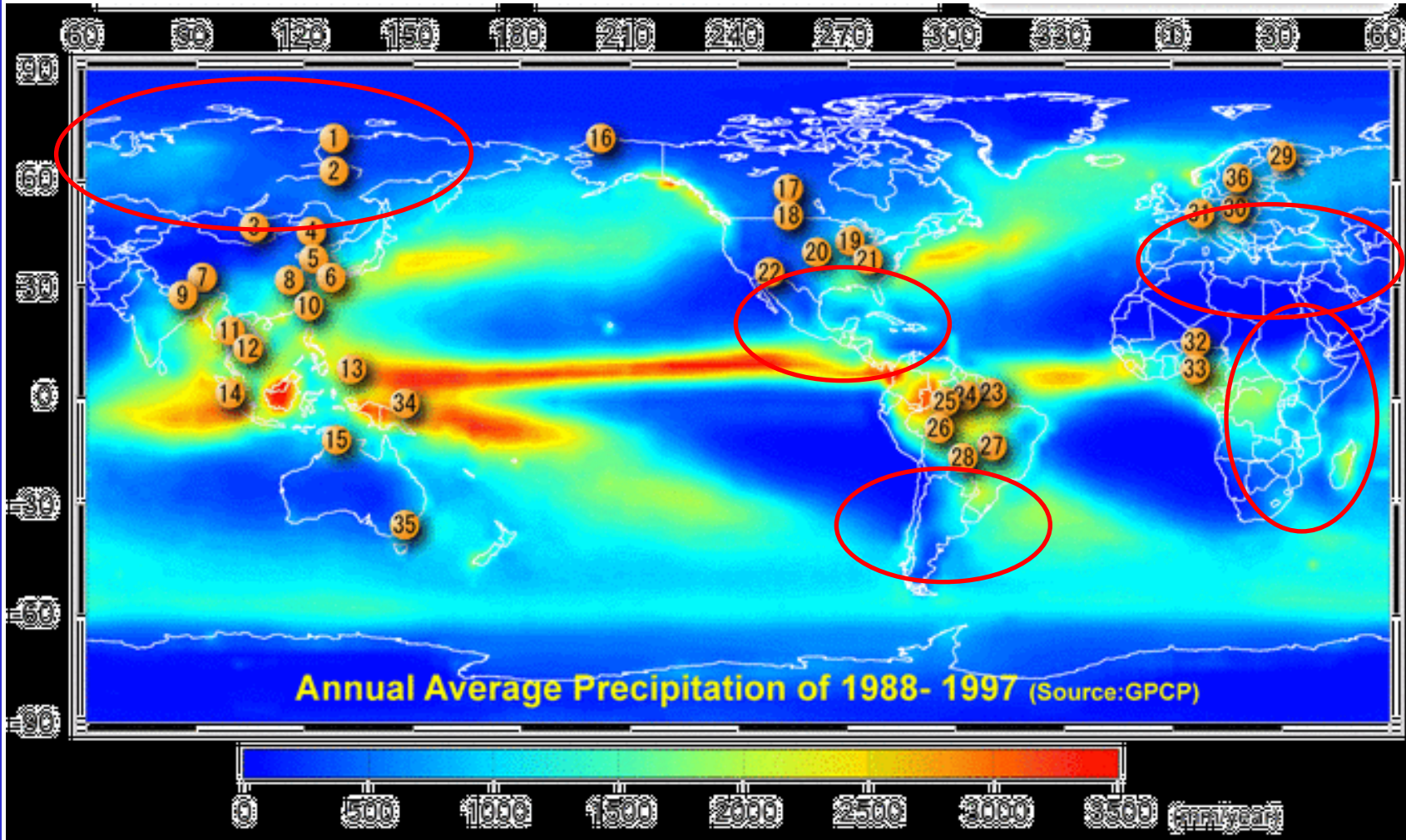
Large vulnerable natural and agricultural ecosystems, and extensive and variable dry land areas exist in the region.

Sites are currently – or have already been - built up



Major **continental** gaps in current site coverage

The Ocean ?



New CEOP Reference Sites and Towards Increased Global Coverage

1. Additional continental sites

Exploring existing CSEs:

e.g. La Plata, AMMA (enhance current observations)

Exploring existing sites within GEWEX/WCRP

e.g. BSRN, FLUXnet,...

Exploring upcoming projects and programmes beyond GEWEX:

e.g. NEESPI, CliC,.....

Exploring other consortia beyond GEWEX:

e.g. European IP/NoE consortia on climate (Mediterranean) and Super Sites

Ocean Reference Sites

(*e.g.* Buoy, islands, ,...)



PHASE-2 REFERENCE SITES

CSE	Site Name	Country	Phase-2
BALTEX	Lindenberg	Germany	Continuing
BALTEX	Sodankyla	Finland	Continuing
BALTEX	Cabauw	Netherlands	Continuing
BALTEX	Norunda	Sweden	No funding



PHASE-2 REFERENCE SITES

CSE	Site Name	Country	Phase-2
CPPA/GAPP	ARM/SGP	USA	Continuing
CPPA/GAPP	Ft. Peck	USA	Continuing
CPPA/GAPP	Bondville	USA	Continuing
CPPA/GAPP	Oak Ridge	USA	Continuing
CPPA/GAPP	Mt. Bigelow	USA	No funding



PHASE-2 REFERENCE SITES

CSE	Site Name	Country	Phase-2
LBA	Rondonia	Brazil	Continuing
LBA	Pantanal	Brazil	Continuing?
LBA	Brasilia	Brazil	No funding
LBA	Manaus	Brazil	Continuing
LBA	Santarem	Brazil	No funding
LBA	Caxiuana	Brazil	No funding



PHASE-2 REFERENCE SITES

CSE	Site Name	Country	Phase-2
CAMP	Siberia Tundra	Russia	Continuing
CAMP	Siberia Taiga	Russia	Continuing
CAMP	Mongolia	Mongolia	Continuing
CAMP	Inner Mongolia	China	Continuing
CAMP	Korea Peninsula	Korea	Not Available
CAMP	Korean Haenam	Korea	Not Available



PHASE-2 REFERENCE SITES

CSE	Site Name	Country	Phase-2
CAMP	Tibet	China	Continuing
CAMP	Himalayas	Nepal	Continuing
CAMP	Northern-South China Sea	China	Continuing
CAMP	Chao Phraya River	Thailand	Continuing
CAMP	NE Thailand	Thailand	Continuing
CAMP	Western Pacific Ocean	Ocean	Continuing



PHASE-2 REFERENCE SITES

CSE	Site Name	Country	Phase-2
CAMP	Equatorial Island	Ocean	Not Available
CAMP	N Mongolia	Mongolia	Proposed
CAMP	Yellow River	China	Proposed
CAMP	Central Vietnam	Vietnam	Proposed
CAMP	NE Bangladesh	Bangladesh	Proposed
CAMP	Langzhou	China	Proposed



PHASE-2 REFERENCE SITES

CSE	Site Name	Country	Phase-2
CAMP	Pakistan	Pakistan	Proposed
CAMP	Tsukuba	Japan	Proposed
CAMP	Heihe River Basin	China	Proposed
CAMP	West Maritime	Indonesia	Proposed
CAMP	Central Maritime	Indonesia	Proposed
CAMP	Eastern Maritime	Indonesia	Proposed

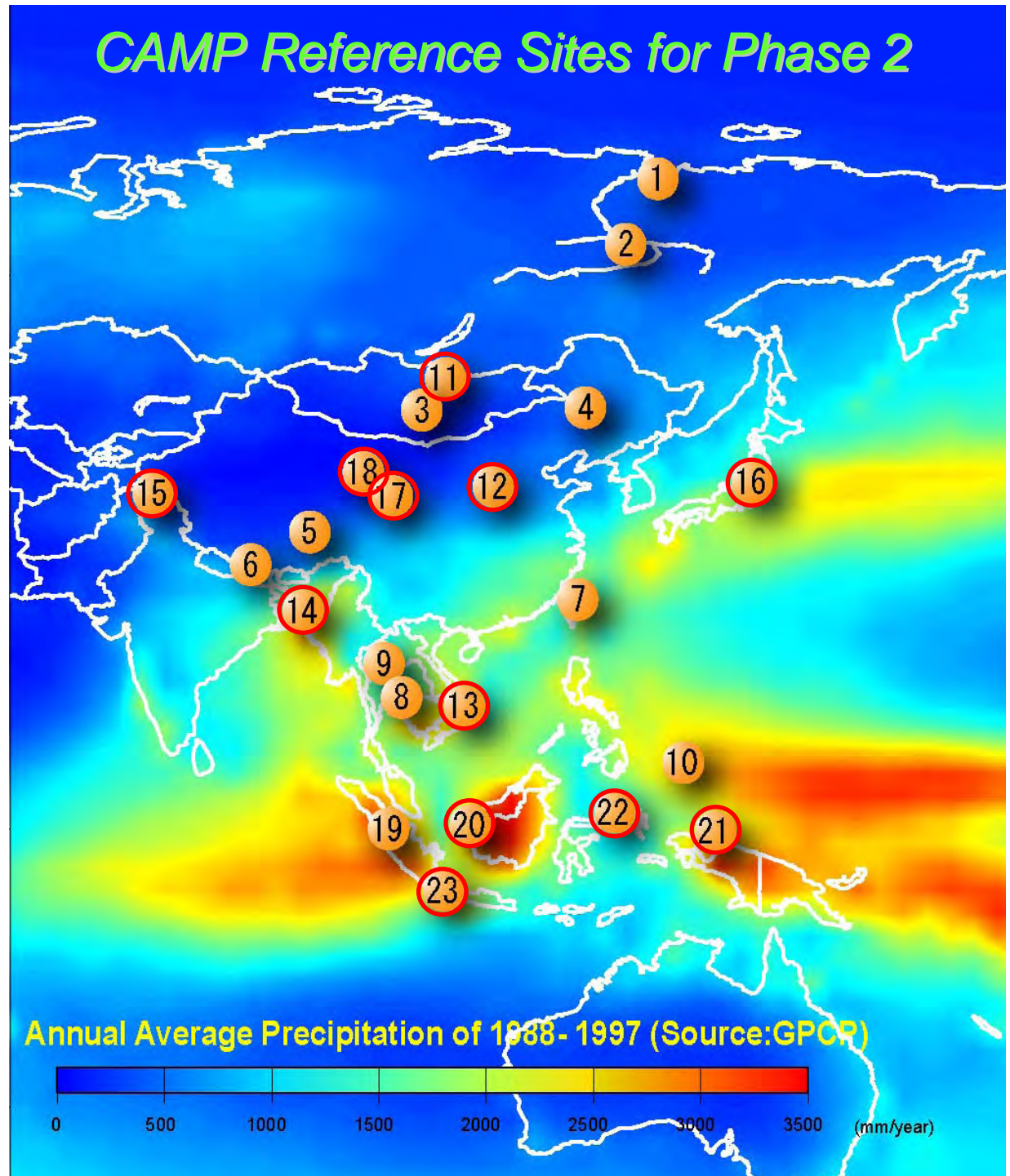


PHASE-2 REFERENCE SITES

CSE	Site Name	Country	Phase-2
CAMP	North Maritime	Indonesia	Proposed
CAMP	South Maritime	Indonesia	Proposed

No.	Ref. Site Name
1	Eastern Siberian Tundra
2	Eastern Siberian Taiga
3	Mongolia
4	Tongyu
5	Tibet
6	Himalayas
7	Northern South China Sea - Southern Japan
8	Chao-Phraya River
9	North-East Thailand
10	Western Pacific Ocean
11	Northern Mongolia
12	Downstream of the Yellow River
13	Central Vietnam
14	Northeast Bangladesh
15	Pakistan
16	Tsukuba
17	Lanzhou
18	Heihe River Basin
19	Western Maritime Continent
20	Central Maritime Continent
21	Eastern Maritime Continent
22	Northern Maritime Continent
23	Southern Maritime Continent

 New Reference site



CAMP Reference Site Information

No.	Ref. Site Name	MOLTS Location			Satellite Scene Center		Remarks
		Key Station Name	Latitude	Longitude	Latitude	Longitude	
1	Eastern Siberian Tundra	Tiksi	71.617 N	128.750 E	71.617 N	128.750 E	Imp.
2	Eastern Siberian Taiga	Yakutsk	62.255 N	129.618 E	62.200 N	129.667 E	Imp.
3	Mongolia	Mandalgobi	45.743 N	106.264 E	46.283 N	107.298 E	Imp.
		Ulannbaator	47.828 N	106.726 E	47.828 N	106.726 E	Imp.
4	Tongyu	Cropland, Grassland	44.416 N	122.867 E	44.416 N	122.867 E	Imp.
5	Tibet	Naqu	31.370 N	91.900 E	32.000 N	91.899 E	Imp.
		Gaize	32.500 N	84.080 E	32.500 N	84.080 E	Imp.
		Dali	25.700 N	100.183 E	25.700 N	100.183 E	Pre.
		Linzhi	29.768 N	94.738 E	29.768 N	94.738 E	Pre.
		Litang	30.000 N	100.100 E	30.000 N	100.100 E	Pre.
		Xinjin	XXXXX	XXXXX	XXXXX	XXXXX	Pre.
6	Himalayas	Pyramid	27.959 N	86.813 E	27.959 N	86.813 E	Imp.
7	Northern South China Sea - Southern Japan	Taipei	24.967 N	121.181 E	24.967 N	121.181 E	Imp.
8	Chao-Phraya River	Lampang	18.400 N	99.470 E	18.400 N	99.470 E	Imp.
9	North-East Thailand	Nakhonrachasima	14.466 N	102.379 E	14.466 N	102.379 E	Imp.
10	Western Pacific Ocean	Peleliu	7.040 N	134.269 E	7.040 N	134.269 E	Imp.
		Aimeliik	7.452 N	134.476 E			Imp.
11	Northern Mongolia	Kherlen-Bayan-Ulaan	47.213 N	108.742 E	47.750 N	109.000 E	Imp.
		Forest site	48.352 N	108.654 E			Imp.
12	Weishan Irrigation District along the downstream of the Yellow River	Gaoying	36.649 N	116.054 E	36.649 N	116.054 E	Imp.
13	Central Vietnam	Da Nang	16.033 N	109.185 E	15.586 N	108.108 E	Imp, Pre
14	Northeast Bangladesh	Sylhet	24.900 N	91.893 E	24.833 N	91.300 E	Imp, Pre
15	Pakistan	Baltoro Glacier	35.728 N	76.286 E	35.728 N	76.286 E	Imp.
16	Tsukuba	Univ. of Tsukuba	36.110 N	140.100 E	36.110 N	140.100 E	Imp. Plan
17	Lanzhou	SACOL	35.946 N	104.137 E	35.946 N	104.137 E	Imp.
18	Heihe River Basin	Linze	39.500 N	100.000 E	39.500 N	100.000 E	Imp.
19	Western Maritime Continent	Kototabang	0.200 S	100.300 E	0.200 S	100.300 E	Imp, Pre
20	Central Maritime Continent	Pontianak	0.000 S	109.400 E	0.000 S	109.400 E	Imp, Pre
21	Eastern Maritime Continent	Biak	1.200 S	136.100 E	1.200 S	136.100 E	Pre.
22	Northern Maritime Continent	Manado	1.500 N	124.900 E	1.500 N	124.900 E	Pre., Imp
23	Southern Maritime Continent	Serpong	6.400 S	106.700 E	6.400 S	106.700 E	Imp, Plan

Imp: Implementing , Pre: Preparing, Plan: Planning



PHASE-2 REFERENCE SITES

CSE	Site Name	Country	Phase-2
MAGS	BERMS	Canada	Continuing
MDB	Tumbarumba	Australia	Continuing
MDB	Murrumbidgee	Australia	Continuing
AMMA	Niamey	Niger	Continuing
AMMA	Ouémé	Bénin	Continuing



PHASE-2 REFERENCE SITES

CSE	Site Name	Country	Phase-2
	ARM/TWP/ DARWIN	Oceania	Continuing
	ARM/NSA	USA	Continuing
LPB	TBD	TBD	New
	?????	Mexico	Possible
	?????	Tunisia	Possible
NEESPI??	?????	Russia	Possible

Issues for Discussion:

Additional data to include in CEOP data sets: friction velocity, clouds (cloud coverage, heights), aerosols (AOD), snow

- Need to incorporate science into Reference Site selection
- Future strategy with respect to completeness of CEOP data sets (gap filling at least for WEB forcing data) ?
- Treatment of energy budget non-closure ?
- Aim at a certain harmonisation concerning data processing steps (turbulent fluxes) ?
- Can the hydrology / basin (run-off) issue be solved via GTN-H, does CEOP really need to put separate care on that ?
- Others?

REALITY CHECK – Lots of work and \$\$\$ goes into each Reference Site! We need to select sites wisely based on science and research needs.....