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“Simulation Networks - 1”

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1. Introduction

Networks of 16, 24, 32, and 40 stations are needed for the simulations. I have used Jörg Wresnik's networks as a starting point and enclose here some suggested modifications. I also have modified his *matlab* script for plotting the positions and I use this to show some of the candidate networks.

The principal change has been to replace the stations in Antarctica with other sites, except for the 40-station network, even though some of them (e.g. Kerguelen) are island locations that do not now have fiber access. Marshall Eubanks provided a sample of island sites indicating whether or not each has a fiber connection. I have included some of both. One rationale for including island sites without fiber is that at least initially it is likely that data will be returned to the correlators as air freight, so most non-Antarctic sites have at least the possibility of getting data out on a weekly basis, as has been approximately the case for Ny Alesund.

2. Stations

I have combined Jörg's lists into one but use four additional columns to indicate whether a site is included in each N-station network, N = 16, 24, 32, and 40. All sites that were considered are listed in Table 1. The list is in order of increasing East longitude, but since some stations were added after the initial list was compiled (mostly Jörg's list). I have not renumbered the list. Not all sources are included in a network, but, in making the networks, once a station is included, it is also included for any larger network.

The station names are included both in the list and on the figures. The names are either that of the VLBI site or the site names from the IGS station list. I also have given only longitude and latitude since I do not think the height needs to be included in the simulations.

If desired the maps could be printed without the country outlines or plate boundaries, and the sequence number could be used in place of the site name if we want to make the actual geographic location more difficult to figure out.

3. Networks

The networks for N = 16, 24, 32, and 40 are shown in Figures 1-4.

The stations in each of these networks are in files that can be sent. The networks that correspond to the figures are named *sim_net_NNstns.txt* where NN= 16, 24, 32, 40 and are dated 2007/1/31. The *matlab* script is named *plot_net_aen_1.m* and was created 2007/1/31 22:30 and is available on request I can also fairly easily create maps with other origins, including polar. Jörg may know other projections that show the distribution for different

origins in a better way. I show one example of this same projection for 32 stations but with the origin at the South pole in Figure 5.

Table 1. Stations for simulation in longitude order (but sequence numbers are not sequential).

seq	name	lon	lat	16st	24st	32st	40st
1	NYALES20	11.87	78.93	1	1	1	1
2	WETTZELL	12.88	49.15	1	1	1	1
3	MSKU	13.33	-1.38	0	0	1	1
4	MATERA	16.70	40.65	0	0	0	0
5	HARTRAO	27.69	-25.89	1	1	1	1
6	SVETLOE	29.78	60.53	0	0	0	1
7	HALY	36.06	29.08	0	1	1	1
8	SYOWA	39.58	-69.01	0	0	0	1
9	MALI	40.11	-2.59	0	1	1	1
10	ZELENCHK	41.57	43.79	0	0	1	1
41	REUN	55.57	-21.21	0	0	0	0
11	YIBL	56.07	22.11	0	0	0	0
47	KERG	70.25	-49.35	1	1	1	1
46	DGAR	72.37	-7.27	0	0	1	1
12	NewDelhi	77.20	28.60	0	0	1	1
13	BAN2	77.31	13.02	1	1	1	1
43	URUM	87.63	43.59	0	0	0	0
14	BADARY	102.23	51.77	1	1	1	1
50	KUNM	102.70	25.06	0	0	0	1
15	YARRAGAD	115.82	-29.79	0	1	1	1
16	SESHAN25	121.20	31.10	0	0	0	0
17	KATHERIN	133.00	-14.00	0	1	1	1
44	PALAU	134.50	7.35	0	0	1	1
18	TSUKUB32	140.09	36.11	1	1	1	1
19	LAE1	147.00	-6.40	0	0	0	0
20	HOBART26	147.44	-42.80	1	1	1	1
21	MCM4	166.40	-77.50	0	0	0	1
42	KWJ1	167.73	8.72	1	1	1	1
22	AUCK	174.50	-36.36	0	1	1	1
48	FIJI	178.45	18.10	0	0	0	0
23	KOKEE	200.33	22.13	1	1	1	1
24	TAHITI	210.39	-17.58	1	1	1	1
25	GILCREEK	212.50	64.98	1	1	1	1
26	Goldston	243.10	35.40	0	1	1	1
27	ISPA	250.80	-27.07	0	0	1	1
28	SASK	253.76	52.12	0	0	1	1
29	INEG	257.83	21.51	0	0	0	1
30	RIOP	281.61	-1.39	0	1	1	1
31	TIGOCONC	286.96	-36.82	1	1	1	1
32	WESTFORD	288.51	42.61	1	1	1	1
49	BRMU	295.21	32.30	0	0	0	1
33	IQQE	289.92	-20.16	0	0	0	1
34	OHIGGINS	302.10	-63.32	0	0	0	1
35	LPGS	302.45	-34.54	0	0	1	1
36	QAQ1	313.97	60.43	0	1	1	1
37	FORTLEZA	321.57	-3.88	1	1	1	1
38	DAKA	342.73	14.41	0	0	0	0
45	MAS1	344.36	27.76	1	1	1	1
39	RABT	353.49	34.00	0	0	0	0
40	DSS65	355.75	40.43	0	0	0	0

Figures

Figure 1. 16 station network

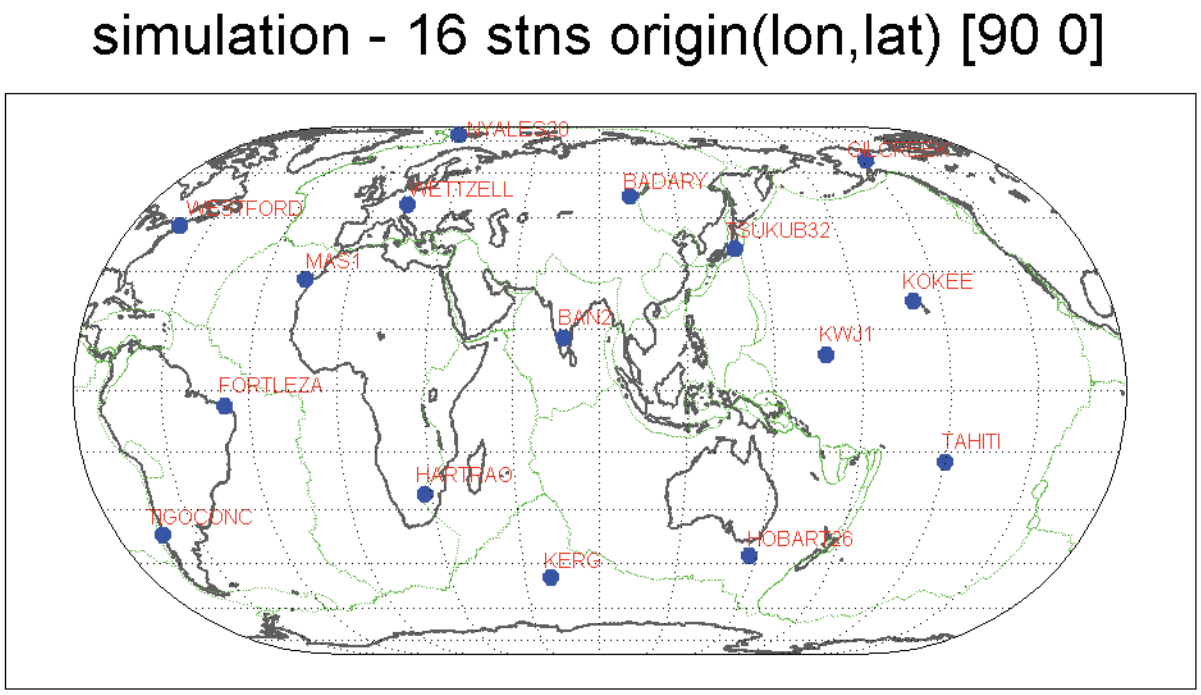

Figure 2. 24 station network

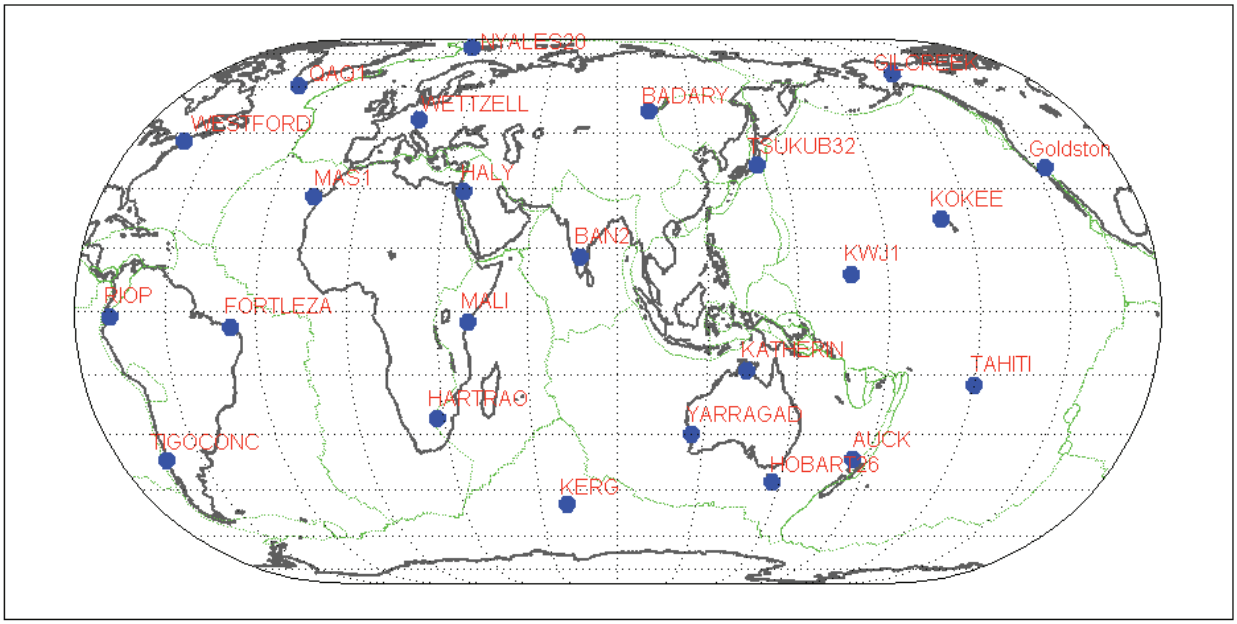

Figure 3. 32 station network

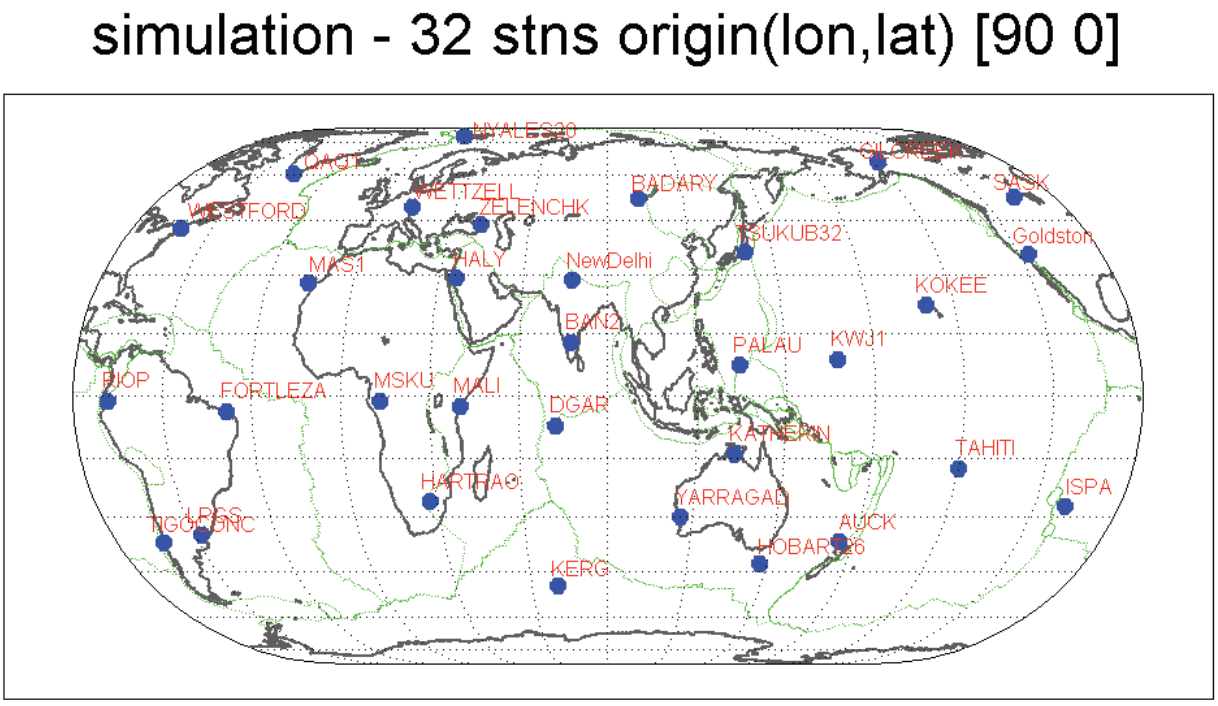

Figure 4. 40 station network

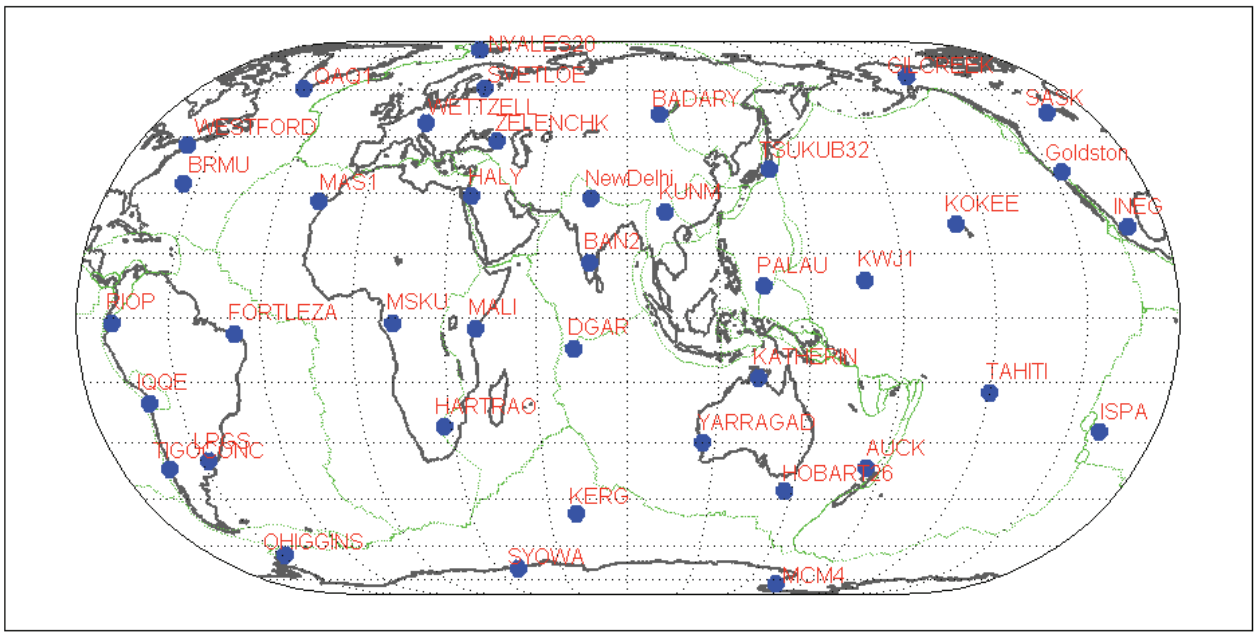

Figure 5. 32 station network as seen from the South Pole.