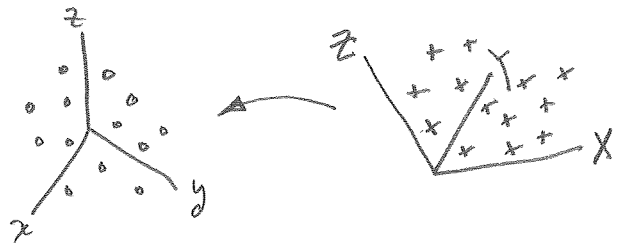


Adj. Geospatial Obs. Homework 4

Estimate 7 parameters of the 3D conformal coordinate transformation, $\lambda, \omega, \phi, k, T_x, T_y, T_z$ using LS and indirect observation method.

$$\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \lambda M \left\{ \begin{bmatrix} X \\ Y \\ Z \end{bmatrix} + \begin{bmatrix} T_x \\ T_y \\ T_z \end{bmatrix} \right\}$$

\uparrow observations \uparrow constant



	constant												
X	11	16	18	13	14	11	19	18	13	14	13	16	15
Y	21	22	27	25	23	22	23	28	27	23	23	27	25
Z	31	31	32	30	32	40	37	38	39	37	35	34	36

	observations													
x	2.46	14.83	20.54	8.45	9.70	-1.43	20.57	18.72	5.75	8.14	6.39	14.66	11.15	
y	2.52	4.42	16.64	12.09	7.38	7.14	7.96	20.58	19.04	8.42	8.27	17.48	13.17	
z	2.62	4.04	6.49	.13	5.60	24.45	17.76	20.77	21.79	18.24	12.69	10.60	15.39	

$$\sigma_x = \sigma_y = \sigma_z = 0.1$$

Make 2-sided global test at $\alpha = .05$

make 50% confidence intervals for $\lambda, \omega,$ and T_x

make 99% confidence interval for T_y