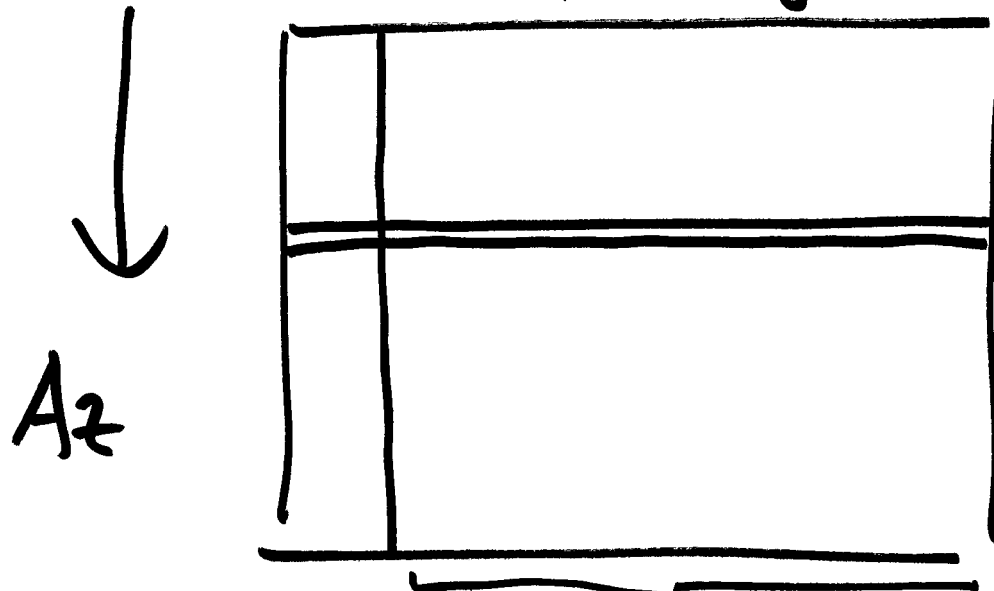


ERS : ASF Alaska Satellite Facility
(NASA)

acquire data



28,000 lines

100 x 100

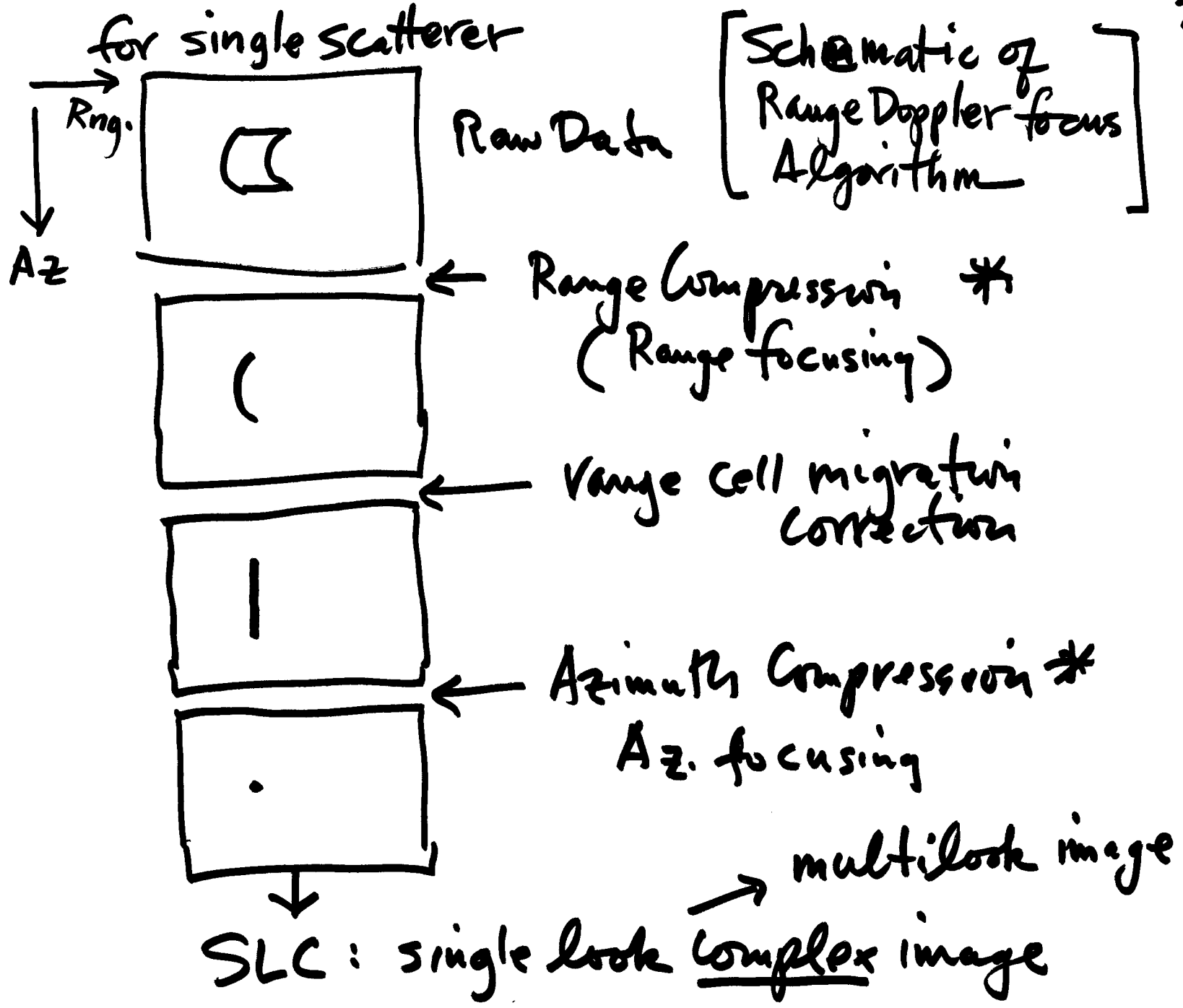
km
nominal ground
dimension

412
byte
header

5616
Complex numbers

5 bits for each of Real & Imaginary

Total 326 MB



Cross correlation:

time domain: slow

freq. domain: faster

Continuous FT:

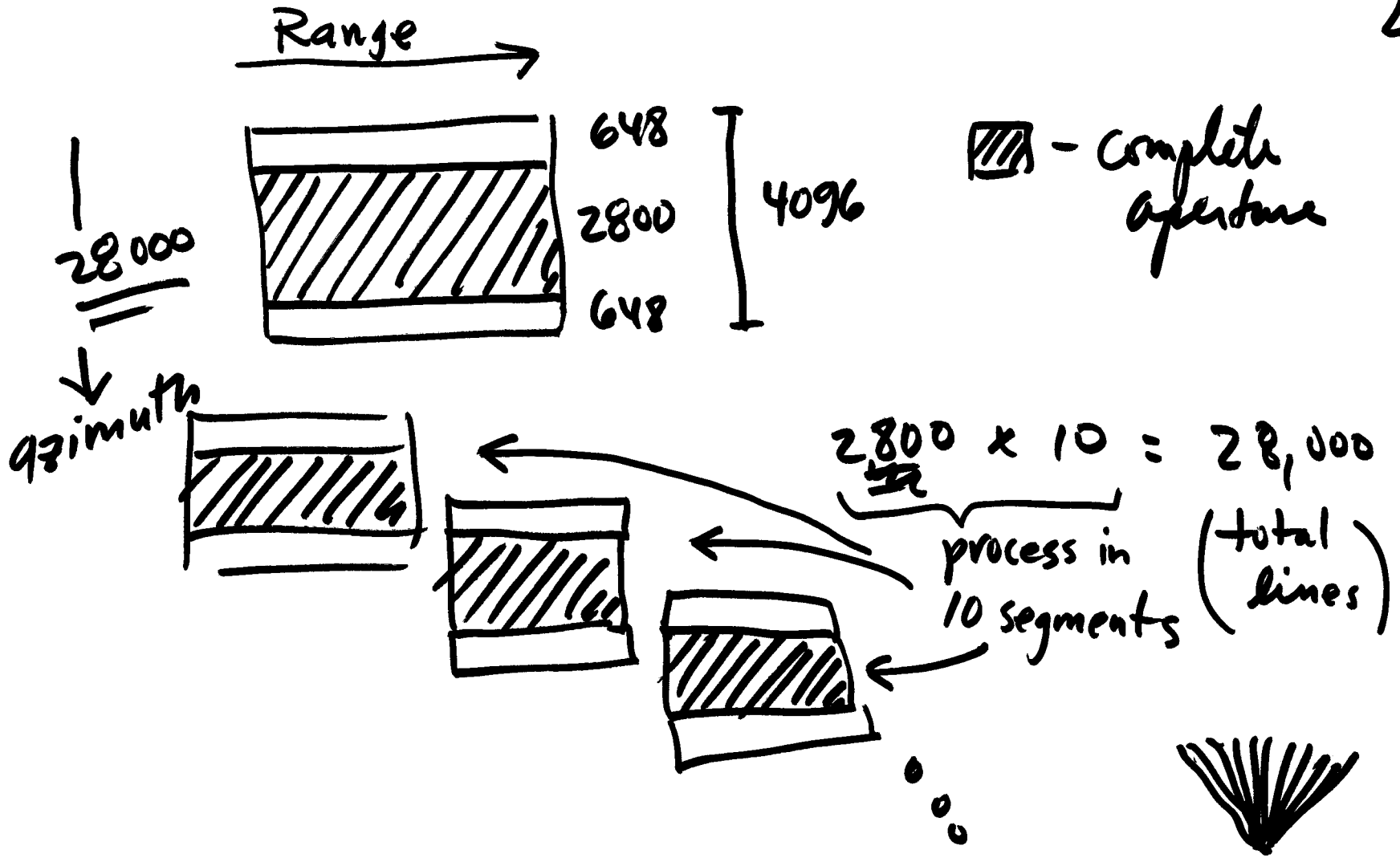
$$G(f) = \int_{-\infty}^{\infty} g(t) \cdot \exp(-i2\pi ft) dt \quad (\text{FT})$$

$$g(t) = \int_{-\infty}^{\infty} G(f) \exp(+i2\pi ft) df \quad (\text{IFT})$$

discrete versions of \uparrow

$$\text{CC: } g_1(t) \otimes g_2(t) = \underline{\underline{\mathcal{F}^{-1} [G_1(f) * G_2^*(f)]}}$$

faster if $n = 2^p$ DFT \Rightarrow FFT



1296 points in complete aperture
 703 points in chirp length ~~~~~

data signal reception

down convert in frequency

fourier shift theorem

$$g(t-t_0) = G(f) \exp(-i2\pi f t_0)$$

$$\rightarrow G(f-f_0) = g(t) \exp(i2\pi f_0 t)$$

↳ down converting in freq.

mixing

demodulation