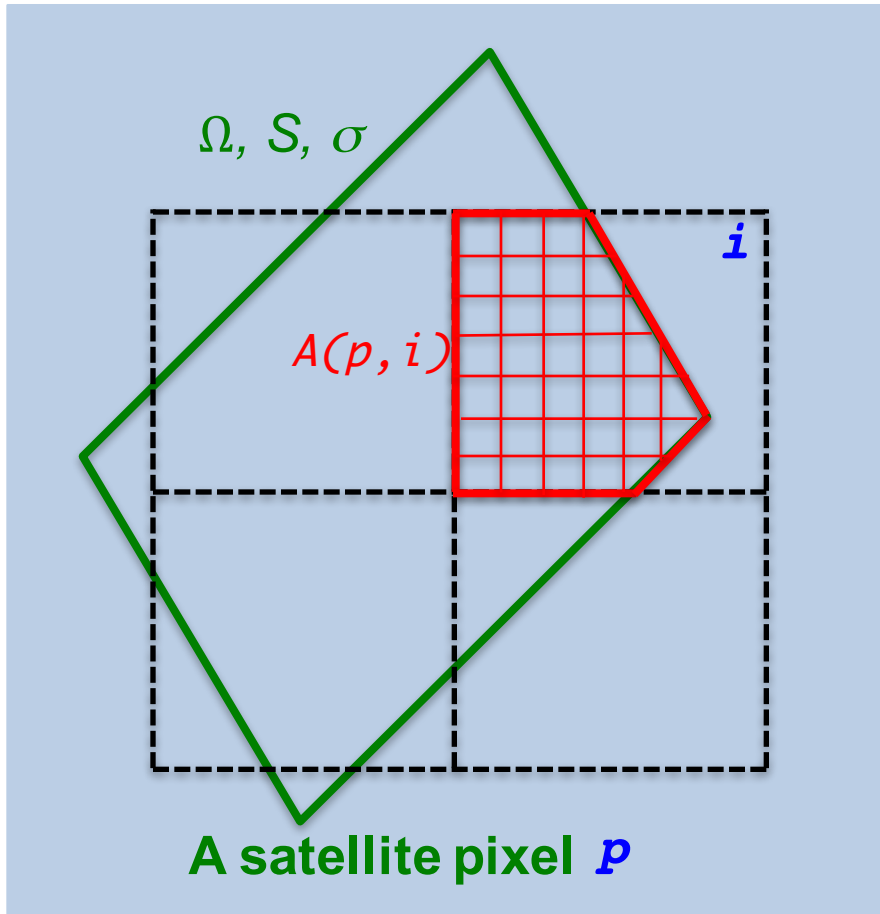# New oversampling approach

Given a satellite pixel p, it has the area of $S(p)$, the column density of $\Omega(p)$, and the uncertainty associated with $\Omega(p)$ is $\sigma(p)$. The overlap area between this pixel and any grid i is denoted as $A(p,i)$.

For any gird i, it has $N(i)$ overlapped satellite pixels. So the overlap area and error weighted average is:

$$\overline{\Omega}(i) = \frac{\sum_{p=1}^{N(i)} \dfrac{A(p,i)}{S(p)\sigma(p)} \Omega(p)}{\sum_{p=1}^{N(i)} \dfrac{A(p,i)}{S(p)\sigma(p)}}$$

- Computationally fast.
- Fully uses and appropriately weights the information from all individual satellite observations with a wide range of pixel sizes and column uncertainties.