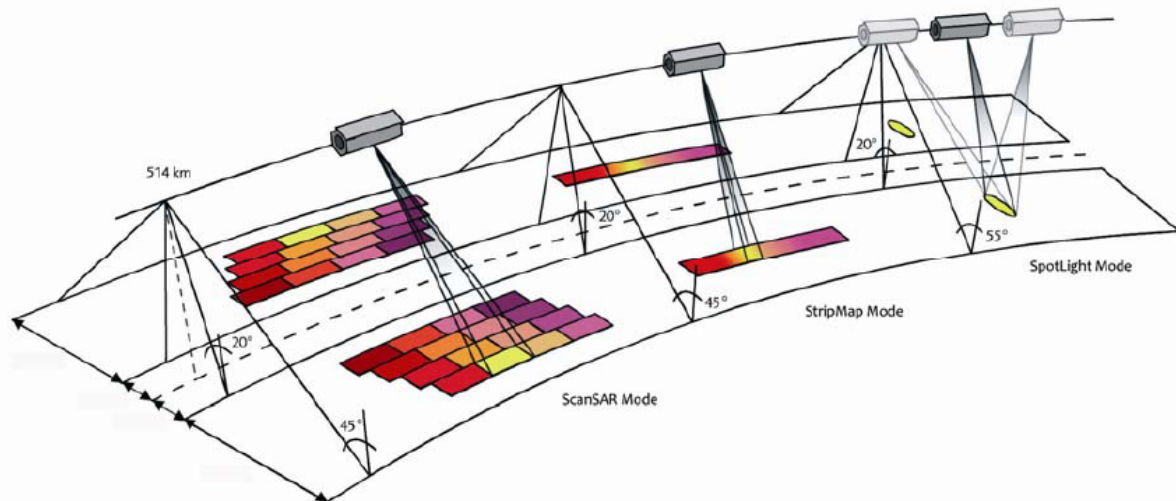


ANNEXE 4 : Description technique des produits

The **standard TerraSAR-X operational mode** is the single receive antenna mode from which the following imaging modes can be retrieved: HighResolution SpotLight and SpotLight, StripMap, and ScanSAR. The single receive antenna mode uses a chirp bandwidth of up to 300 MHz.



The **SpotLight (SL)** imaging modes use phased array beam steering in azimuth direction to increase the illumination time, i.e. the size of the synthetic aperture. This leads to a restriction in the image / scene size. Thus, the scene size is technically restricted to a defined size: 10 km x 10 km for the SpotLight mode and 10 km x 5 km (width x length) in the High Resolution SpotLight (HS) mode.

This sophisticated imaging mode makes it possible to acquire data with up to 1 m resolution in the High Resolution SpotLight mode (acquired with a bandwidth of 300 MHz) and 2 m in the standard SpotLight mode.

StripMap (SM) is the basic SAR imaging mode as known e.g. from ERS-1 and other radar satellites. The ground swath is illuminated with continuous sequence of pulses while the antenna beam is fixed in elevation and azimuth. This results in an image strip with a continuous image quality (in flight direction). StripMap dual polarisation data have a slightly lower spatial resolution and smaller swath than the single polarisation data.

In StripMap mode, a spatial resolution of up to 3 m can be achieved. The standard scene size is 30 km x 50 km (width x length) in order to obtain manageable image files; however, acquisition length is extendable up to 1,650 km.

The table below gives an overview on the operational modes of TerraSAR-X. The four different imaging modes are distinguished by their spatial resolution and coverage:

| Imaging Mode | Standard Scene Size* [km] | Maximum Acquisition Length [km] | Slant Range Res. ¹ [m] | Azimuth Res. ¹ [m] | Polarization | Full Performance Range [°] |
|-----------------------------------|---------------------------|---------------------------------|-----------------------------------|-------------------------------|---------------------------------------|----------------------------|
| HighRes SpotLight (HS) | 10 x 5 | 5 | 1.2 | 1.1 | Single (VV or HH) | 20° to 55° |
| | | | 1.2 | 2.2 | Dual (HH & VV) | |
| HighRes SpotLight 300 MHz (HS300) | 7-10 x 5 | 5 | 0.6 | 1.1 | Single (VV or HH) | 20° to 55° |
| SpotLight (SL) | 10 x 10 | 10 | 1.2 | 1.7 | Single (VV or HH) | 20° to 55° |
| | | | 1.2 | 3.4 | Dual (HH & VV) | |
| StripMap (SM) | 30 x 50 single pol | 1.650 | 1.2 | 3.3 | Single (VV or HH) | 20° to 45° |
| | 15 x 50 dual pol | | 1.2 | 6.6 | Dual (HH & VV, HH & HV, or VV and VH) | |
| ScanSAR (SC) | 100 x 150 | 1.650 | n/a | 18.5 | Single (VV or HH) | 20° to 45° |

*range x azimuth

¹The figures correspond to the Single Look Slant range Complex (SSC) image products.