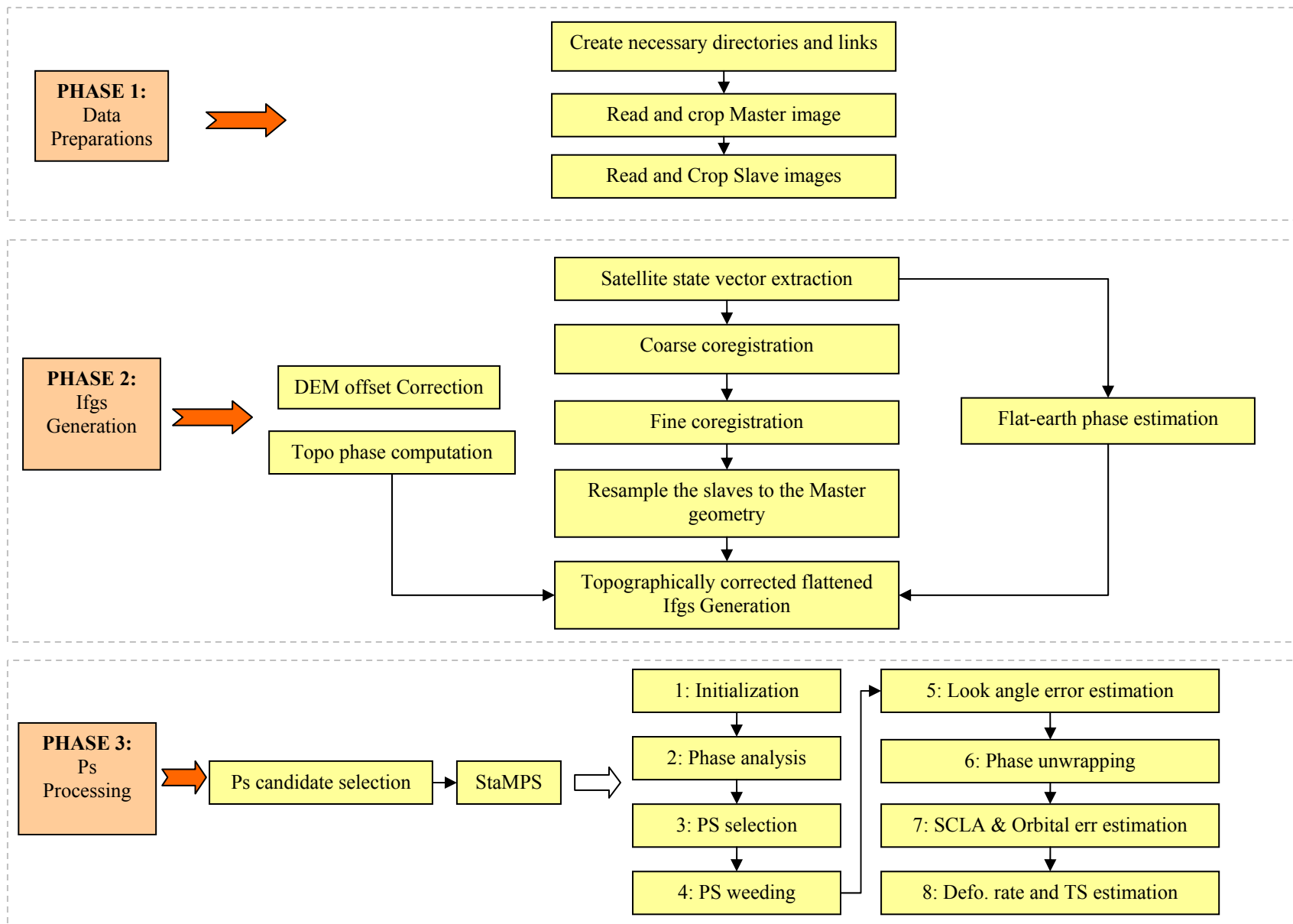


## Steps on StaMPS



## How to run the StaMPS?

Suppose that you are 11 ENVISAT ASAR images and placed them in the below path:

/home/Maryam/step1/data/

The list of the images is:

The steps for running StaMSP are:

### **1. PHASE 1: D Preparations:**

#### **1- Create the SLC folder:**

```
> mkdir SLC
```

#### **2- Create folder naming yyyyymmdd for each image:**

```
> cd SLC
```

```
> mkdir 20080615 20080720 20070805 20070909 20071014 20071118 20071223 20080127 20080302 20080406 20080511
```

#### **3- Make links to the raw data:**

```
> cd 20070805
```

```
> ln -s ../../data/ASA_IMS_1PNUPA20070805_181932_000000162060_00285_28395_7812.N1 image.slc
```

```
> ls
```

```
> cd ../20070909/
```

```
> ln -s ../../data/ASA_IMS_1PNUPA20070909_181929_000000162061_00285_28896_7814.N1 image.slc
```

```
> ls
```

```
> cd ../20071014/
```

```
> ln -s ../../data/ASA_IMS_1PNUPA20071014_181926_000000162062_00285_29397_7815.N1 image.slc
```

```
> ls
```

```
> cd ../20071118/
```

```
> ln -s ../../data/ASA_IMS_1PNUPA20071118_181924_000000162063_00285_29898_7816.N1 image.slc
```

```
> ls
```

```
> cd ../20071223/
```

```
> ln -s ../../data/ASA_IMS_1PNUPA20071223_181924_000000162064_00285_30399_7806.N1 image.slc
```

```
> ls
```

```
> cd ../20080127/
```

```
43 > ln -s ../../data/ASA_IMS_1PNUPA20080127_181925_000000162065_00285_30900_7811.N1 image.slc
44 > ls
45 > cd ../20080302
46 > ln -s ../../data/ASA_IMS_1PNUPA20080302_181925_000000162066_00285_31401_7813.N1 image.slc
47 > ls
48 > cd ../20080406
49 > ln -s ../../data/ASA_IMS_1PNUPA20080406_181925_000000162067_00285_31902_7803.N1 image.slc
50 > ls
51 > cd ../20080511/
52 > ln -s ../../data/ASA_IMS_1PNUPA20080511_181925_000000162068_00285_32403_7804.N1 image.slc
53 > ls
54 > cd ../20080615
55 > ln -s ../../data/ASA_IMS_1PNDPA20080615_181926_000000162069_00285_32904_0329.N1 image.slc
56 > ls
57 > cd ../20080720/
58 > ln -s ../../data/ASA_IMS_1PNDPA20080720_181927_000000162070_00285_33405_0328.N1 image.slc
59 > ls
60 > cd ../
```

61  
62 **4- Check if all the links are correctly created:**

```
63 > ls -l 200*/
```

64

65 **5- Choose an image as Master (here it is 20071014) and go to its folder. Then read the whole Master image:**

```
66 > cd 20071014
```

```
67 > step_read_whole_Envisat
```

68

69 **6- Display the Master image:**

```
70 > eog *.ras
```

71

72 **7- Select your area of interest and edit the file master\_crop\_geo.in for cropping:**

```
73 > cd ../SLC/
```

```
74 > vi master_crop_geo.in
```

75

76 **8- Crop the Master image based on the edited master\_crop\_geo.in:**

77

```
78 > cd 20071014/
```

```
79 > step_master_read_geo
```

80

81 **9- Crop all Slave images w.r.t the cropped Master image:**

```
82 > cd ../
```

83 > make\_read\_geo

84

85

86 **10- Display all the cropped images:**

87 > eog 200\*/\*.ras

88

89 Note: After cropping the Master image a new folder called INSAR masterdate (here is INSAR 20071014) is  
90 created.

91

92

93 **2. PHASE 2: Interferograms Generation:**

94

95 **11- Make a new folder DEM and place your DEM in it:**

96 > mkdir DEM

97

98

99 **12- Edit the satellite heading parameters (to be extracted using envisat\_dump\_header) in the** image.slc.rsc file:

100 > cd INSAR\_20071014/

101 > vi image.slc.rsc

102

103 **12- Edit the file timing.dorisin in the INSAR\_20071014 folder and update the following fields:**

104 > vi timing.dorisin

105

106 the fields to be updated are:

107

108

109 ----

110

111 **13- Extract the satellite state vector of the Master image using:**

112 > step\_master\_orbit\_ODR

113

114 **14- DEM offset correction:**

115 > step\_master\_timing

116 **15- Extract the satellite state vector of the Slave image using:**

117 > make\_orbits

118

119 **16- Do coarse cogistration:**

120 > make\_coarse

121

122 **17- Do fine coregistration:**

123 > make\_coreg

124

120 **18- Build the topographic phase for each interferogram using DEM:**

126 > make\_dems

127

128 **19- Resample each slave image into the master geometry:**

129 > make\_resample

130

131 **20- Generate the raw, flattened and topographically corrected interferograms:**

132 > make\_ifgs

133

134 **21- Calculate the latitude and longitude for each pixel:**

135 In one slave directory, run:

136 > step\_geo

137

138 **3. PHASE 3: PS Processing:**

139

140 **22- Identify the PS candidates by dividing the area into patches and compute the amplitude dispersion:**

141 > mt\_prep 0.4 3 2 50 200

142

143 **23- PS identifications and deformation time series estimations:**

144

145 Run Matlab as below:

146 > matlab -nojvm -nosplash

147

148 in Matlab run the following steps:

149

150 **1-23- initializations:**

151 > stamps(1,1)

152 In this step various files including baselines information, computed amplitude dispersions, lambda, heading and etc. are loaded and stored in various workspaces.

153

154 **2-23- temporal coherence estimations:**

155 > stamps(2,2)

156 In this step the temporal coherence is estimated for all candidate PS pixels using a bandwidth filter.

157

158 **3-23- PS selection**

159 > stamps(3,3)

160 Final phase-stable PS pixels are selected in this step.

161 **4-23- Weeding selected pixels:**

162 > stamps(4,4)

163

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**5-23- Correcting phase for spatially uncorrelated look angle error**

> stamps(5,5)

**6-23- Phase unwrapping**

> stamps(6,6)

**7-23- Estimating and smoothing the spatially-correlated look angle error**

> stamps(7,7)

**8-23- Estimating other spatially-correlated noise:**

> stamps(8,8)

**24- Show the results:**

Show deformation rate:

> ps\_plot('v')

Show deformation rate from which the slca error and master contribution part are removed:

> ps\_plot('v-dm')

Show deformation time series:

> ps\_plot('u')

Show deformation time series which the slca error, orbit ramp and master contribution part are removed:

> ps\_plot('u-dmo')

Note: The deformation time series are stored in phuw2.mat. For more information about showing the StaMPS result please see the StaMPS Manual.