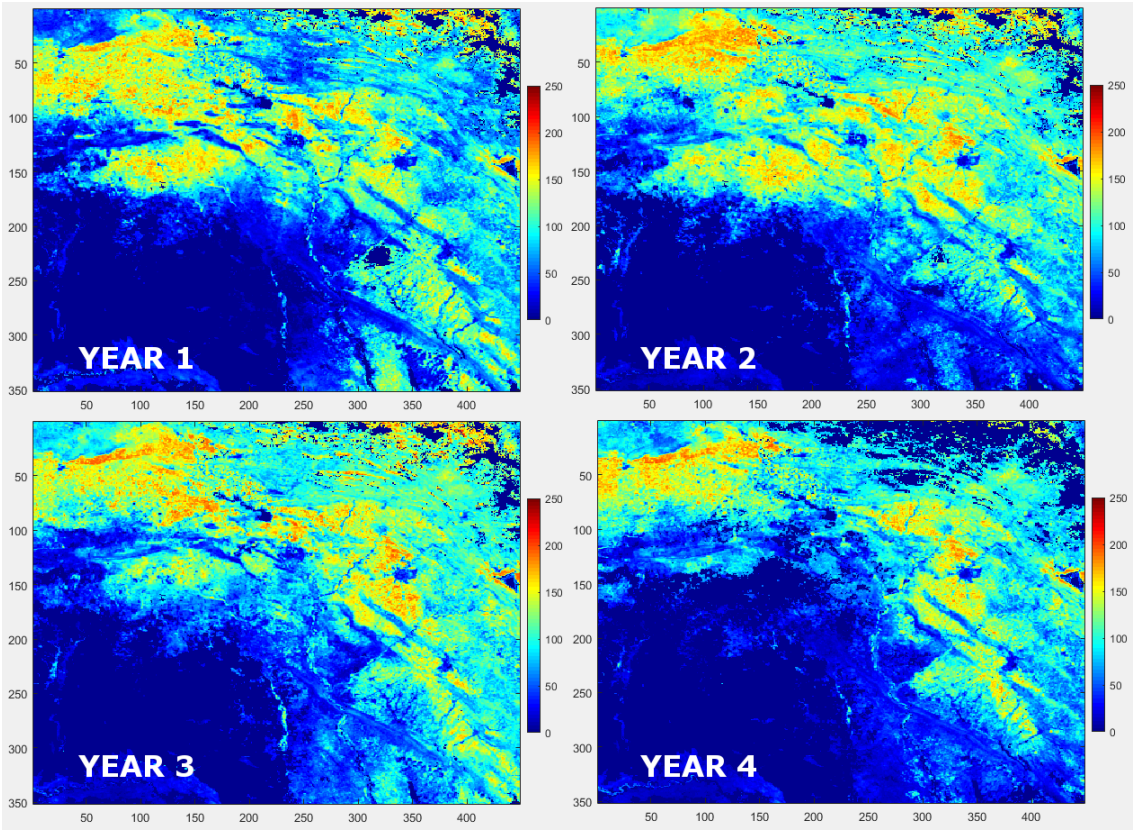
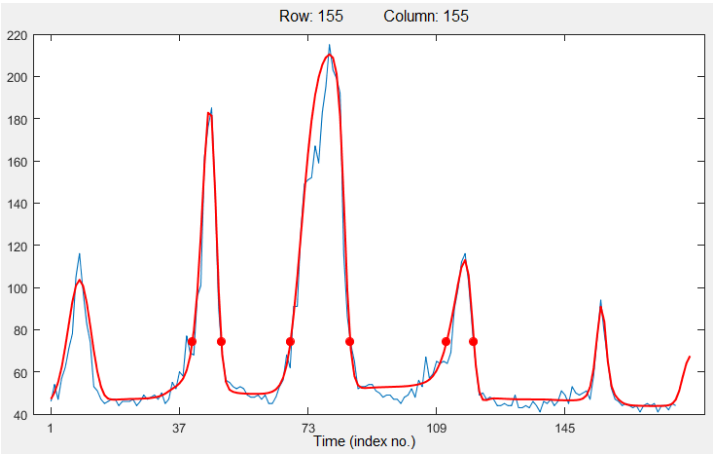
Visualizing and exporting TIMESAT image output

Model answers

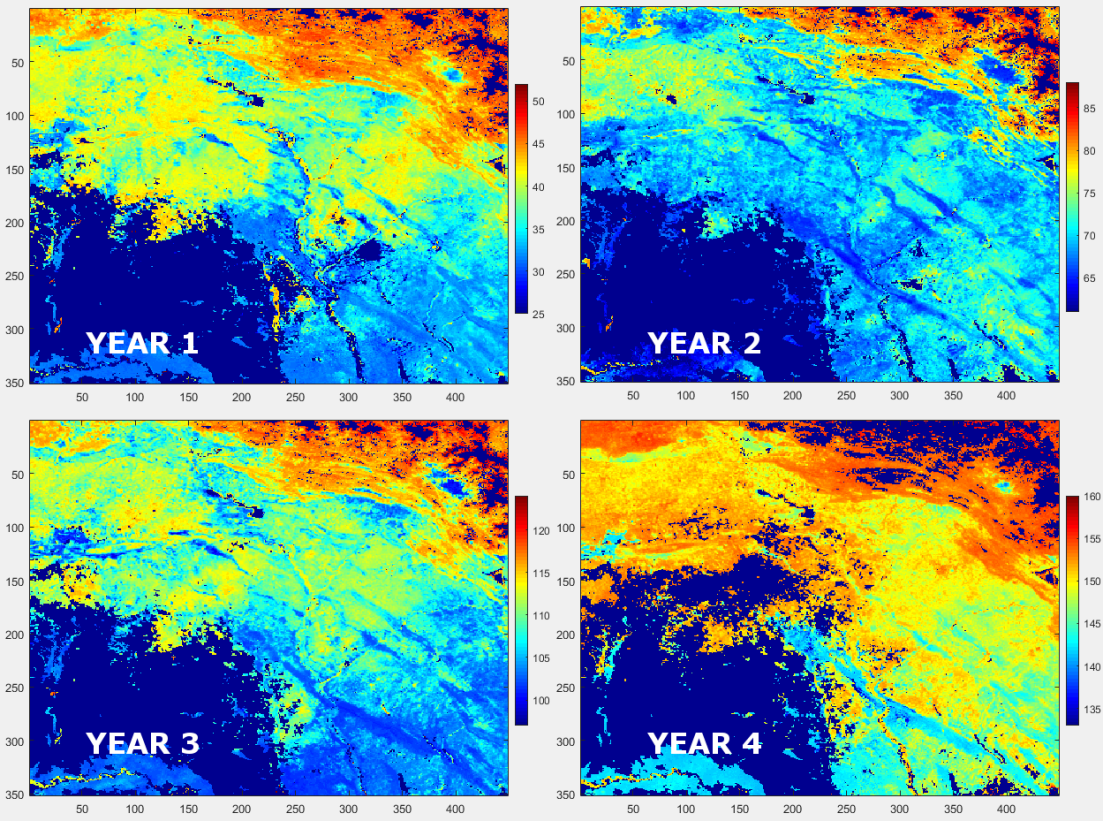
1. Mapping the amplitude for each year with **TSM_imageview** will give a result as follows (make sure to always apply the same image scaling to make the images comparable!):



Several differences can be observed. Perhaps one of the most striking differences is the very small amplitude in year 4 for the large region around row=150, column=150. A reduced amplitude would probably mean that much lower peak NDVI are attained: there could be various causes for this such as drought, or reduced agricultural production due to security reasons. Actually no phenology retrieval was available for that season (darkest blue areas). See also the time series for example for row=155, column=155:

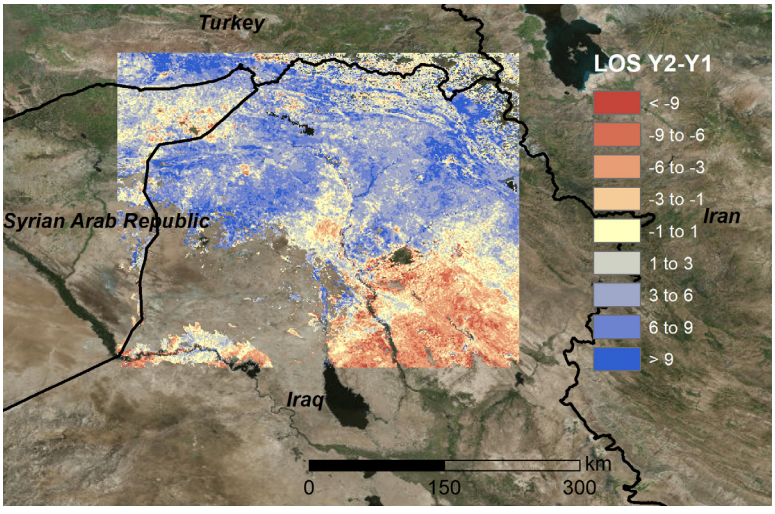


2. If we scale between periods 25 and 52 for year 1, for the subsequent years we have to incrementally add 36 periods to make the output visually comparable. Thus, we scale between 61 and 88 for year 2, between 97 and 124 for year 3, and between 133 and 160 for year 4. This gives the following output:



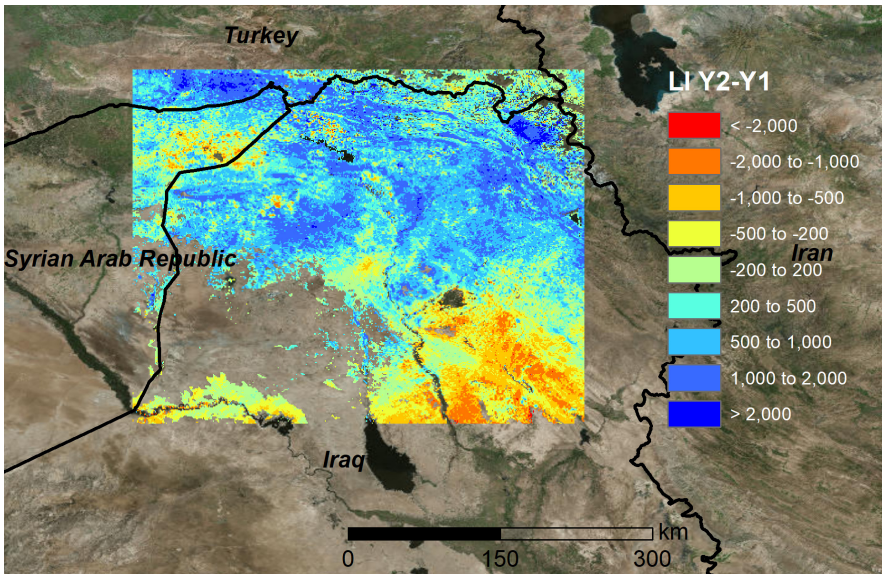
The earliest start-of-season dates are found on average for year 2 (that is the 2014/2015 season), while the latest dates are found for year 4. This matches also with what is shown in the temporal plot in the model answer for question 1.

3. a. Find below a possible outcome of your analysis. In this case I overlayed the map on high-resolution imagery from the [ESRI World Imagery layer] and adding contours of countries.



b. Negative differences indicate that the 2014 season was longer than the 2015 season. The figure above shows that negative differences are found mostly in the south and southeast of our study area (e.g. Kirkuk, Tikrit).

c. The large integral difference map between 2015 and 2014 is displayed below:



d. The patterns are rather similar to the LOS difference map in question 3a. One explanation is that the LI tends to be larger if the integral is calculated over longer seasons. While the NDVI levels within the season also play a role, a longer season means more time for accumulation, or using the TIMESAT figure on p.9 of the user manual (below), a larger value of c will likely translate into larger values of i.