Crop failures and astrogeophysics. I.
Medieval North- East Europe and stormy 2019

Edgars Alksnis
e1alksnis@gmail.com

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Mass destruction of agronomic cultures and livestock in recent years are becoming more and more frequent. Mankind is going to face all depth of thoughts of Thomas Robert Malthus (cf.Bell et al., 2013). Besides considering influences from human activity (Alksnis, 2018) and larger astronomical cycles (Alksnis, 2018A) here obviously are certain unknown short-term factors at play. Reconstruction of medieval temperatures in North- East Europe (fig.1), for example, poses tough questions for geophysics, since possibility, that energy output of the Sun could significantly fluctuate, typically is ruled out by experts.

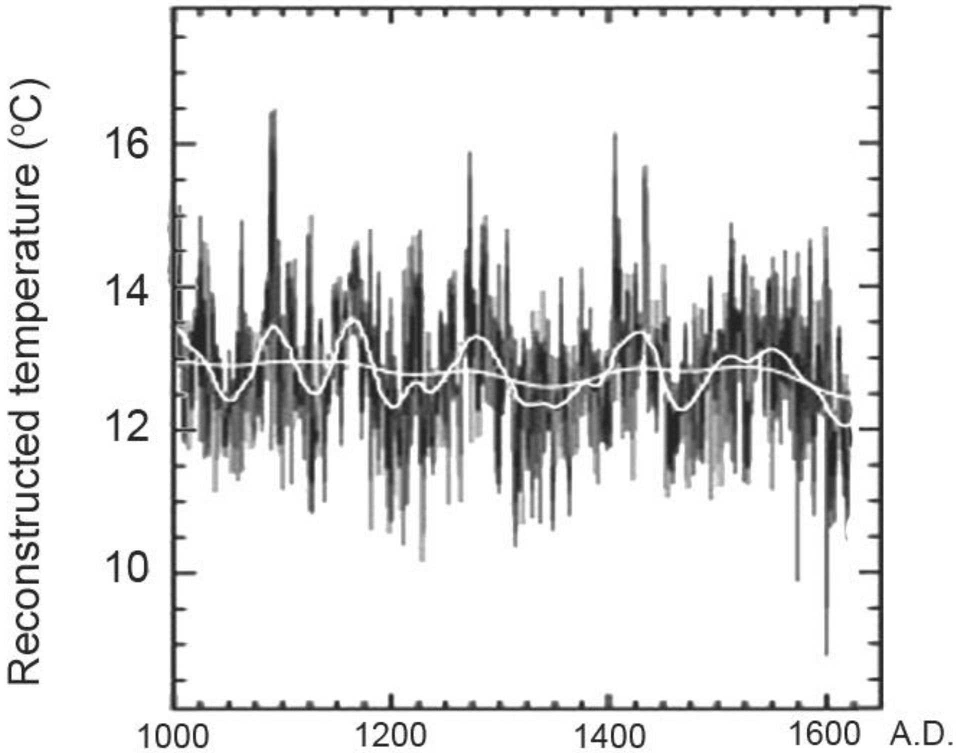

Fig. 1 Reconstructed temperature variability for North-East Europe depicts total variations (black line), decadal (white line), and centennial (nearly horizontal line) variations. (Helama et al. 2009b).

Data from Fig.1 leaves no place for chaos theory- climate changes during mentioned period appear to be rhytmic on decadal scale and near to zero on centennial scale.
Reconstruction of precipitation of medieval North-East Europe (fig.2) generally shows the same picture.

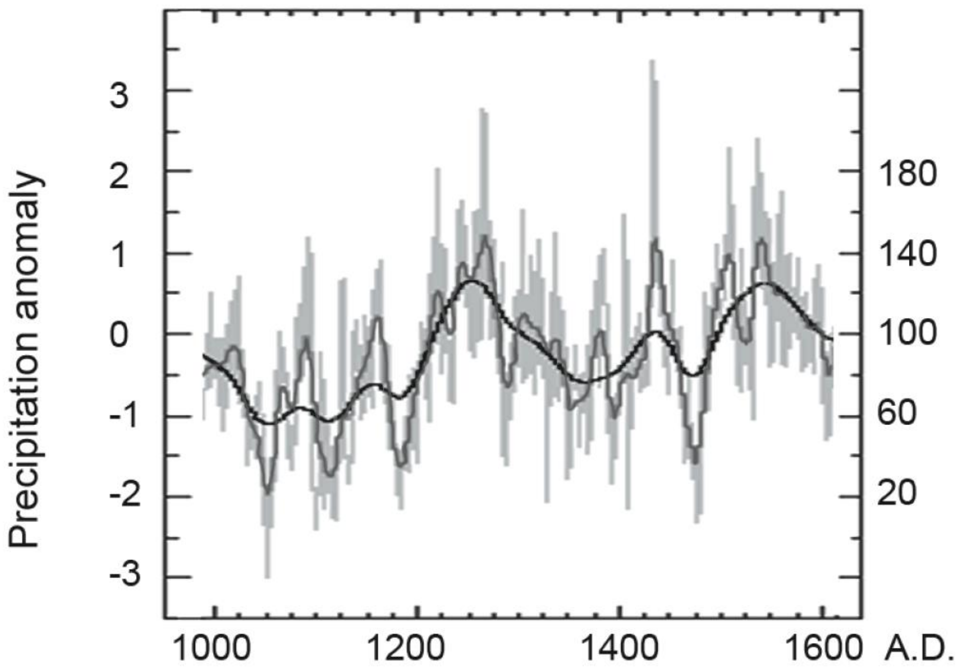

Fig.2. Precipitation variations on interannual (light gray line), multidecadal (dark gray line), and centennial (black line) time scales in medieval North-East Europe. **(Helama et al. 2009a).**

Looking trough the historic documents of North-East Europe, Huhtamaa (2011) concluded that „*it was found that long-term climatic trends did not have a significant effect on the frequency of hunger or famine. Rapid and unexpected climatic phenomena were more likely to cause hunger*".

Departure from infertile chaos theory (Bricmont, 1995; Holmes, 1990) and similarly infertile concept of geocosmically passive Earth (Alksnis, 2018b) leaves us with question about sources of energy for such rapid and unexpected climatic phenomena. These theoretically can be powered by:

1. distant volcanic activity. Peak of volcanic activity typically follows that of solar activity.
2. galactic sources,
3. solar variability,
4. influence from Jovian planets,
5. influence from positions of rocky planets against the Sun, Jovian planets and galactic sources.

For empty universe of Newton's disciples observable fast proceeding long distance interactions remain a mystery. Also mainstream understanding of physics of solar activity and equinoctial phenomena remain poor. Universe of DesCartes and followers, on contrary, is „full" with vortical interactions on different levels- even rocky planets could play here a significant role.

Let us examine historic data of medieval climatic events of North-East Europe, collected in thesis of Huhtamaa (2011) in connection with astrogeophysics. Climate in North-East Europe differs from average European ones, with higher vulnerability for agriculture in spring or autumn. From other side, North-East Europe, for example, do not faced European Great Famine at the beginning of 12th century. Also shift from Warm Medieval Period to Little Ice Age is not observable in historic documents.

Comparative analysis of medieval documents from Scandinavia, Livonia and Novgorod (Russia) reveal such years with extraordinary climatic events (table 1).

Climatic trend	Year
Hot / dry summer or extensive forest fires	1143, 1161, 1223, 1298, 1324, 1330, 1340, 1364, 1365, 1366, 1371, 1374, 1403, 1430, 1525, 1533
Cold / rainy summer	1201, 1230, 1251, 1421, 1455, 1468, 1518
Cold / snowy winter	1165, 1212, 1215, 1216, 1219 (sp), 1221/1222, 1227, 1274, 1306, 1334/1335, 1378, 1389/1390, 1393/1394, 1402 (sp), 1408, 1495
Mild / rainy winter	1143 (au), 1145/1146, 1161 (au), 1217/1218, 1251 (sp), 1303, 1370, 1404, 1453
Late summer	1127, 1477
Early autumn frost / crop failure	1127, 1145, 1161, 1215, 1228, 1230, 1251, 1259, 1291, 1314, 1315, 1389, 1420, 1436, 1442, 1445, 1453, 1466, 1467, 1477, 1507, 1518
Floods	1108, 1125, 1127, 1128,1143, 1176, 1208, 1228, 1291, 1314, 1335, 1337, 1338, 1356, 1370, 1373, 1375, 1376, 1387, 1394, 1404, 1415, 1421, 1436, 1446, 1455, 1495, 1518, 1525, 1540, 1544

Table 1. Annual deviation of different climatic records from the medieval sources (seasonal records; sp: spring, au: autumn). From Huhtamaa, 2011.

Late summer events

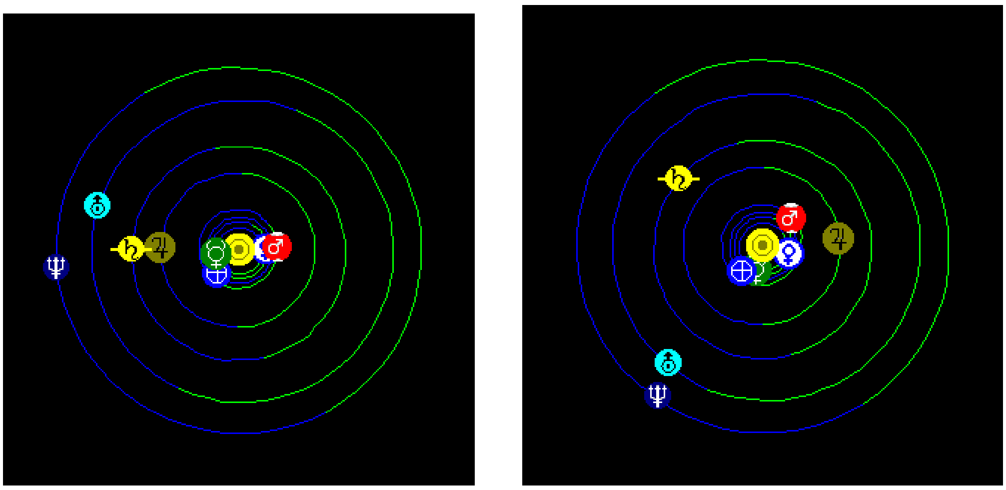

Fig. 3. Planetary ephemerides of May 1, 1127 (left) and May 1, 1447 (right). Credit: Fourmilab.

In vortical astrogeophysics, Jovian planets on oppositions generally are acting as agents, which promote storms, cooling and precipitation. In left picture planetary cooling effect for March-April can be observed more clearly. Next here is cooling effect of Mercury around May 12. In such a unique situation Sun could be pushed farther from the Earth (cf. Blizard, 1969; Chárvatová and Hejda, 2014).

On right picture- Saturn could make February snowy, Uranus and Neptune- cool down late weeks of April and first- from May. Both cases could be worsened by low solar activity (unfortunately data for individual years from medieval time are not exact). We could see such possibility for year 1447 in solar activity reconstruction of Usoskin (2007) (fig.4).

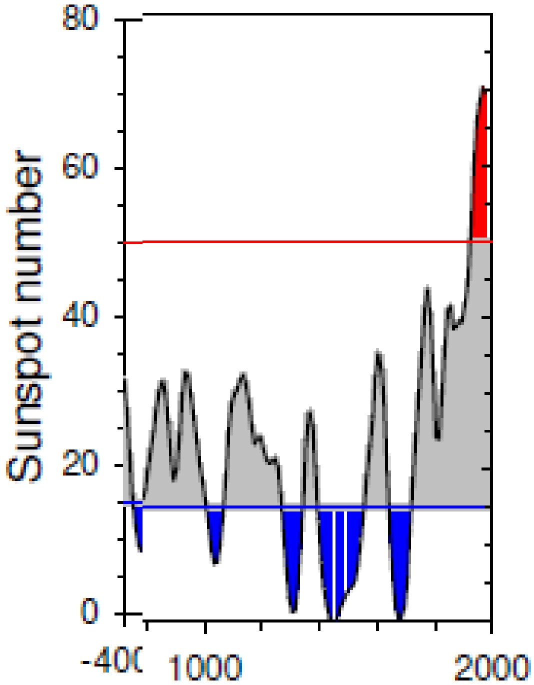

Fig. 4 Reconstruction of solar activity by biomass C^{14}. Modified from Usoskin et al. (2007).

Hot/dry summer or extensive forest fires events

Analysis of planetary ephemerides for **years with hot/dry summers** gives us following pictures (figs 5-16):

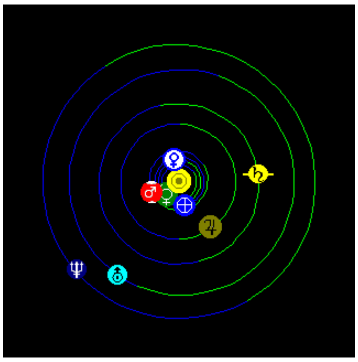

Fig.5 Ephemeris 1143.07.01

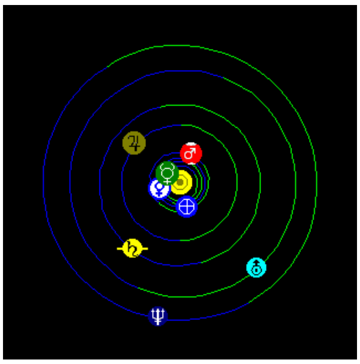

Fig.6 Ephemeris 1161.07.01

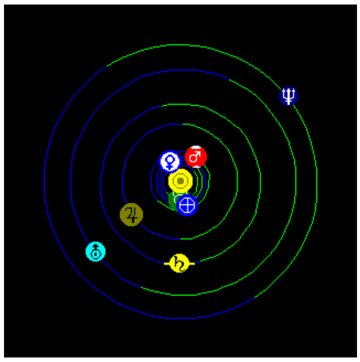

Fig.7 Ephemeris 1223.07.01

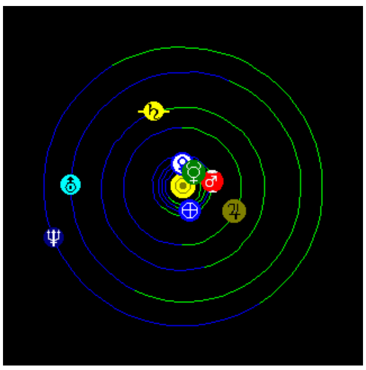

Fig.8 Ephemeris 1298.07.01

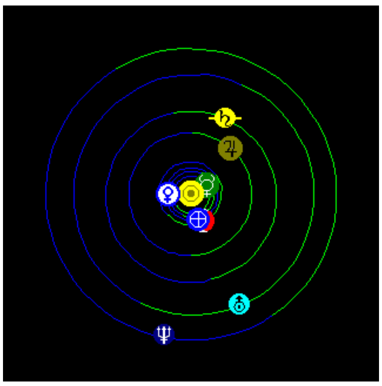

Fig.9 Ephemeris 1324.07.01

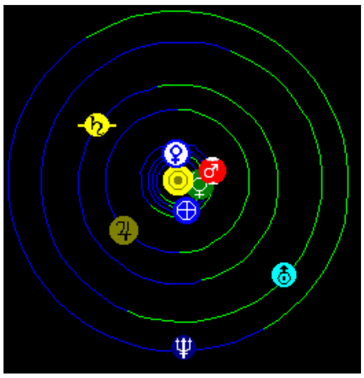

Fig.10 Ephemeris 1330.07.01

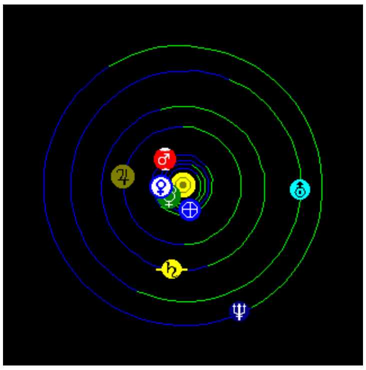

Fig.11 Ephemeris 1340.07.01

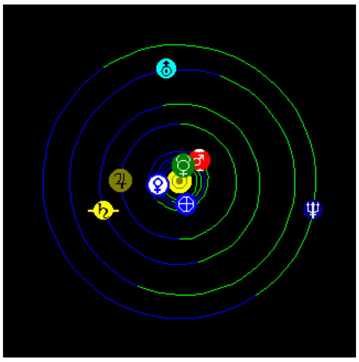

Fig.12 Ephemeris 1364.07.01

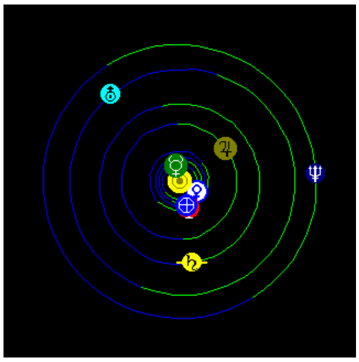

Fig.13 Ephemeris 1371.07.01

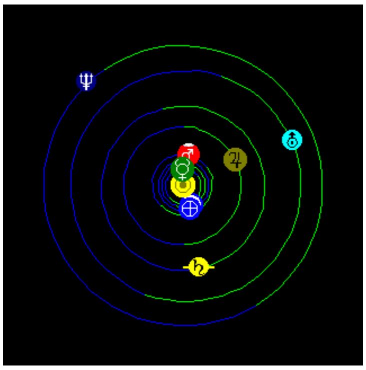

Fig.14 Ephemeris 1430.07.01

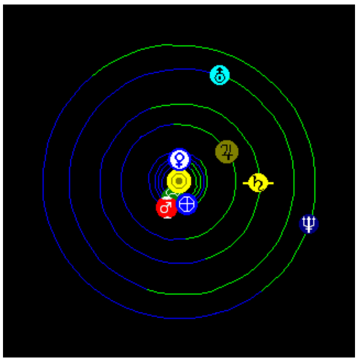

Fig.15 Ephemeris 1525.07.01

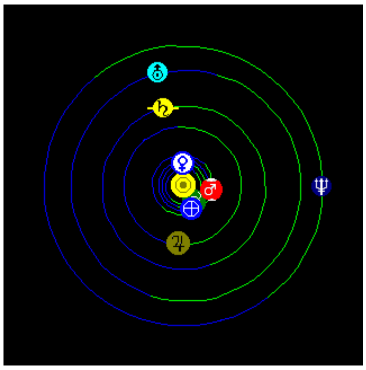

Fig.16 Ephemeris 1533.07.01

. We can observe scarcity of „wetting” planets during summer months (bottom of pictures). Proximity of Mars (fig.9, fig.13, fig 15) could bring drought, as Europe faced in 2018. Positions of Jovian planets typically is asymmetric. Positions of Venus are enigmatic.

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I will continue analysis of past storms, floods and other geocosmic troubles in next papers. Now I will make a brief look to ongoing climatic disaster season of 2019.

Earth overreacted to ephemeris around spring equinox. Simultaneous disturbance of Jupiter/Sun, Saturn/Sun and galactic connections (fig.17) around April, 6 caused next wave of climate disasters.

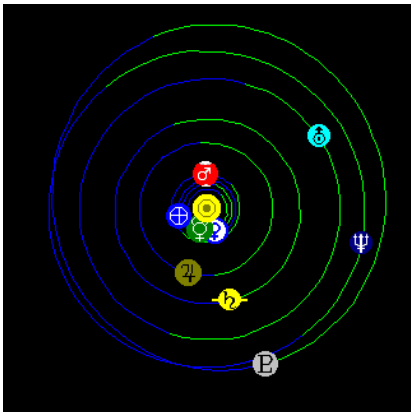


Fig 17. Ephemeris of April 6, 2019

Earth- Jupiter conjuction around June 10 (fig.18) perhaps is too early to make problems on seas (they could be on land).

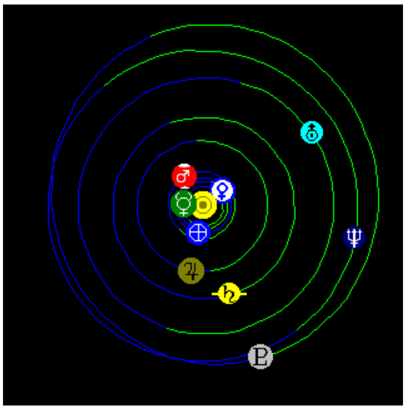


Fig 18. Ephemeris of June, 10, 2019

Conjunctions around July, 10 (fig. 19), on contrary, could cost billions to mankind.

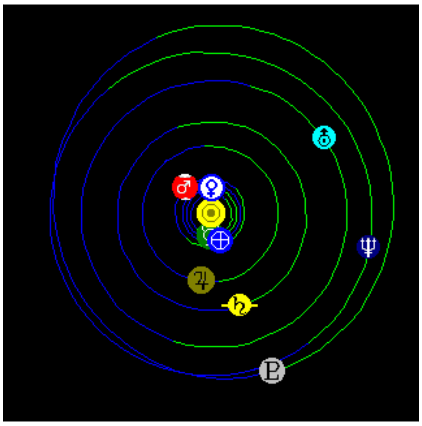
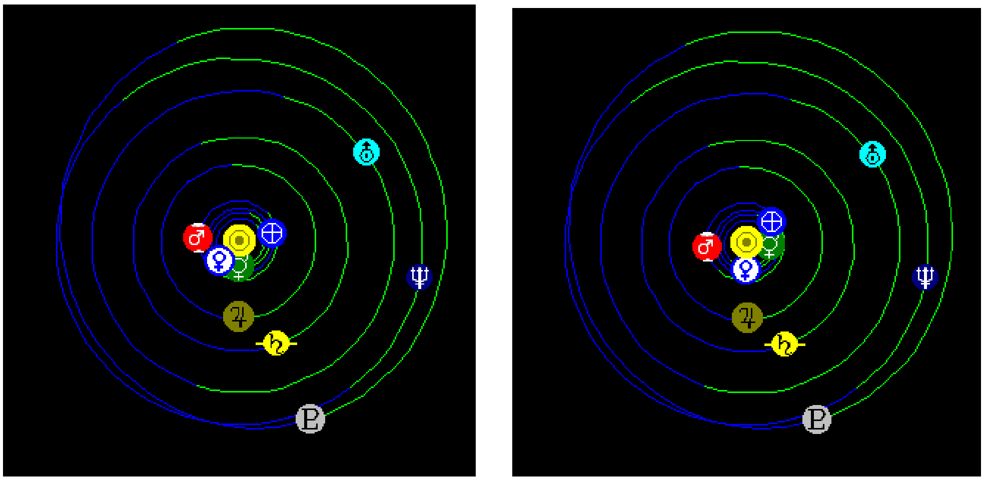


Fig 19. Ephemeris of July, 10, 2019. Credit for all pictures: *Fourmilab*.

August could be less dramatic, conclusions about September is hard to reach such way. Jupiter is reaching important postion (cf. Alksnis 2018c). Two interesting ephemeris we see around October 6 and November 3 (figs 20, 21).



Figs 20, 21. Ephemerides for October 6 and November, 3, 2019, respectively.

Let us see, which planetary configurations are the worst. Positions of Jupiter and Saturn are somewhat similar with these of stormy 1959 and 1900.

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