J Aeronaut Aerospace Eng 2017, 6:2(Suppl)
http://dx.doi.org/10.4172/2168-9792-C1-017

3rd International Conference and Exhibition on

Satellite & Space Missions

May 11-13, 2017 Barcelona, Spain

Inorganic carbon production within *E. huxleyi* blooms in sub-polar and polar seas: A satellite time series study (1998-2013)

Dmitry V Pozdnyakov and **Dmitry V Kondrick**
Nansen International Environmental and Remote Sensing Centre, Russia

Owing to developed original algorithms, multi-year time series of variations in the *E. huxleyi* blooming occurrence, surficial extent as well as the content of particulate inorganic carbon (PIC) and partial pressure of CO_2 (ΔCO_2) in the North, Norwegian, Greenland, Barents and Bering seas were obtained from OC CCI data for the time period 1998-2013. The bloom areas in the North Atlantic-Arctic water are the lowest in the Greenland Sea (10000-3000 km^2) and by an order of magnitude higher in the Barents Sea. The same pattern holds for total PIC within blooms: 400-14000 t in the Greenland Sea and ~350 000 t in the Barents Sea. Annually invariable spatio-temporal pattern of *E. huxleyi* blooming advancement across the North Atlantic and Arctic Oceans is revealed. Starting from the southern Great Britain, blooms eventually appear firstly in the North and Norwegian Seas (in early June), then in the Greenland Sea (in late June), and finally in the Barents Sea (in late July-early September). In the Bering Sea, the counter pattern is highly irregular before and after the 1997-2013 period of high intensity of this phenomenon, the blooms are sporadic and their extent is insignificant. The bloom area extents and PIC contents in the Barents and Bering Sea are very similar. The assessed values of ΔCO_2 indicate that within *E. huxleyi* blooms the ocean CO_2 absorption capacity is appreciably decreased.

dmitry.pozdnyakov@niersc.spb.ru

Retrospective analysis of GLE events and estimates of radiation risks

L I Miroshnichenko[1,2]
[1]IZMIRAN, Russia
[2]Skobeltsyn Institute of Nuclear Physics, Russia

Near-Earth's environment can be considered as a unique place where different space radiation fields are co-existing and can play a significant role in the estimation of radiation risks both for robotic and manned space missions. One cannot exclude the synergetic effects for particular spacecraft orbits as the result of simultaneous impact of the different radiation fields. Modern state of the problems related to Ground Level Enhancements (GLEs) of Solar Cosmic Rays (SCR) is critically analyzed based on available direct and proxy data. We also consider extremely large fluxes on non-relativistic solar energetic particles (SEP). Special attention is paid to recent debate on validity, origin and properties of the events AD775 and AD1859 (Carrington event). We demonstrate that, in spite of existing uncertainties in proton fluences above 30 MeV, all of them are fitted well by a unique distribution function, at least, with present level of solar activity. Extremely large SEP fluxes are shown to obey a probabilistic distribution with a sharp break in the range of large fluences (or low probabilities). The studies of this kind may be extended for the periods with different levels of solar activity in the past and/or in the future. Considering the recent confirmation of super-flares on solar-type stars, this issue merits attention. Dose rates at aircraft altitudes are also demonstrated during the GLE60 (15 April 2001) along two actual flights (computed from the GLE parameters deduced by different groups), as well as ambient dose equivalent during GLE69 (20 January 2005) computed by different groups for three assumed flights. We consider some examples of using of the models to estimate changes of radiation hazard in the interplanetary space for the expected reduction of solar activity during the nearest solar cycles 25-26.

leonty@izmiran.ru