

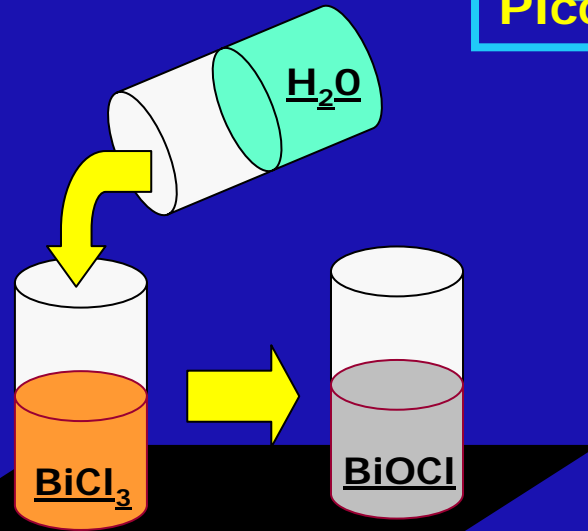


## Piccardi's Chemical Test Results as a Support of Russian Researches in Heliogeophysics and Heliobiology from 20s

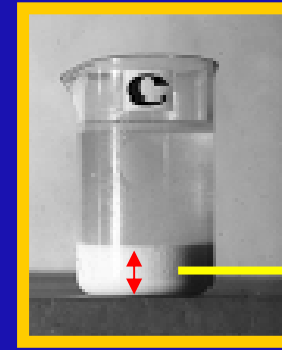
- ➔ The Italian scientist **Giorgio Piccardi** (1895 – 1972) carried out for more than 20 years its original **"chemical test"** based on the reaction  $\text{BiCl}_3 + \text{H}_2\text{O} \rightarrow \text{BiOCl} + 2\text{HCl}$  showing evidence of a correlation between the statistical results of the test and the solar activity cycle (sunspot number). So, in many aspects, Piccardi's research has anticipated the modern science of "space weather".
- ➔ Piccardi's results **supported several empirical researches in heliogeophysics and heliobiology largely carried out in Russia from 20s**, showing qualitative correlations between biological, medical and social phenomena with environmental factors, especially of solar origin. Some of the Russian scientists involved in these scientific studies were: V. Vernadski (1863 – 1945), who introduced the term "biosphere" and anticipated the "Gaia hypothesis", the microbiologist S. Velkhover (1885 – 1942), the geophysic M. Eigenson (1906 – 1962) and, above all, A.L. Tchijevski (1897 – 1964), who registered correlations between solar activity and the trends of several epidemic diseases and social events.
- ➔ Piccardi's scientific works had a large diffusion in Russia in 50s and 60s. **He had contacts with many russian scientists and held several conferences in then URSS:** in Moscow, in Leningrad (now Saint Petersburg) and at Pulkovo Observatory. In particular, Piccardi was a dear friend of Tchijevski, who was also a painter and gave him some admirable paints.



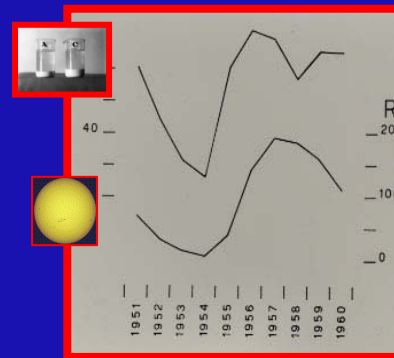
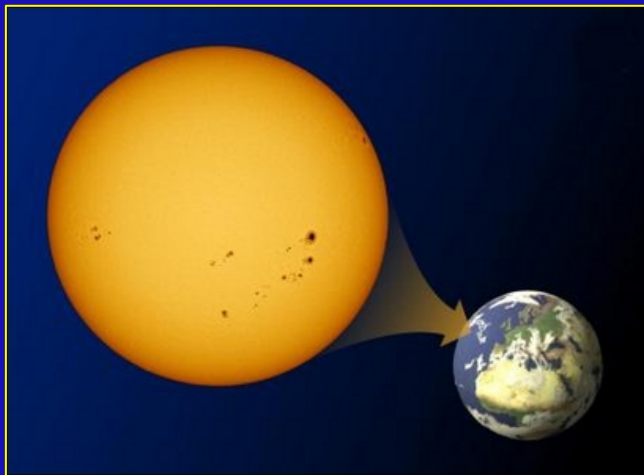
Giorgio Piccardi  
(1895 – 1972)



Piccardi's chemical test



different precipitation velocity of  $\text{BiOCl}$  in the course of time (day, months, years etc.) is valuable by different height of the colloid after a determined time



secular variations of test D according to solar activity

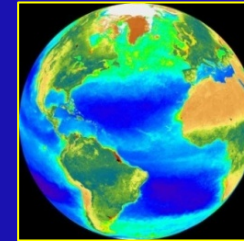
some russian scientists who studied Sun-Earth relations in biological, medical and social sciences



Vladimir I. Vernadsky  
(1863 – 1945)



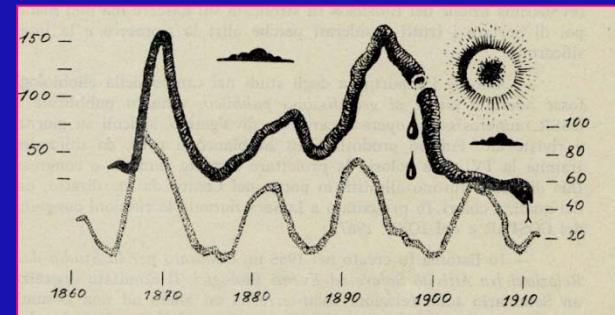
"inventor" of the term biosphere and precursor of "Gaia hypothesis"



Alexander L. Tchijevski  
(1897 – 1964)



correlations between several epidemic diseases and social events with solar activity



M. Eigenson  
(1906 – 1962)

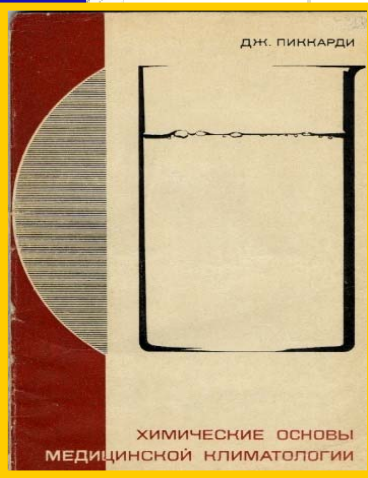


astrophysic, pioneer of heliogeophysic

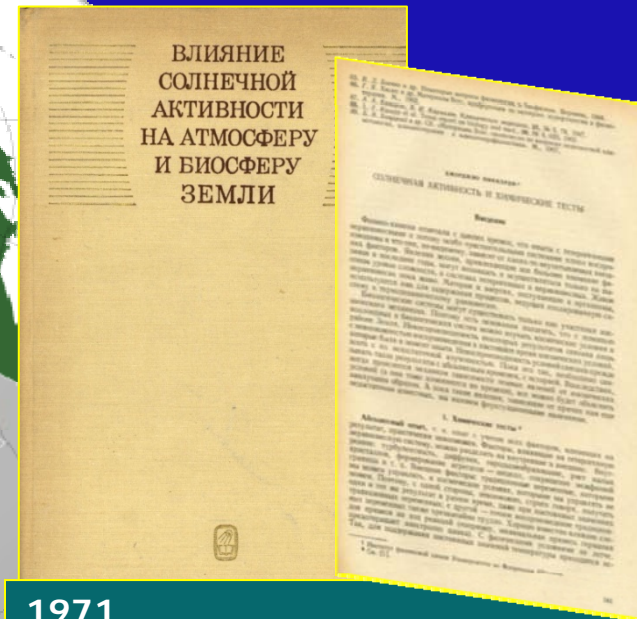




some Piccardi's  
russian publications



1967 (russian edition)  
G. Piccardi: The Chemical Basis  
of Medical Climatology



1971  
G. Piccardi: Solar Activity  
and Chemical Test

in Gnevyshev M.N., Ol' A.I. (Eds.):  
The Influence of the Solar Activity on  
the Atmosphere and Biosphere of the  
Earth



## the new science of space weather

Piccardi's chemical test is based on a "fluctuating phenomenon", able to indicate actual space conditions



Piccardi's work anticipated the new science of space weather

