



Lourdes
L'INSPIRATRICE



« EUROPE-INBO 2016 » 14th International Conference For the implementation of the European Water Directives

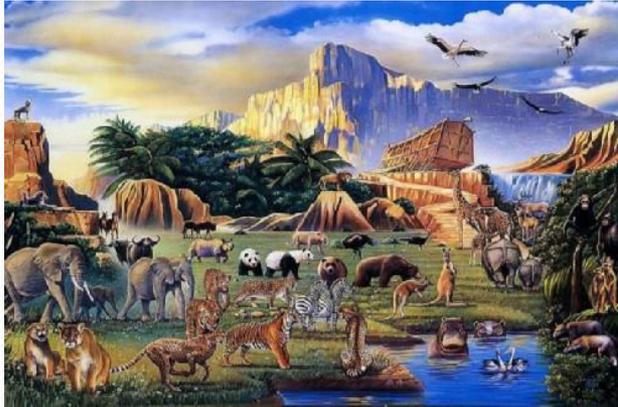
19-22 October 2016 - Lourdes - France

**Flood risks,
management and
measures
in the basins**

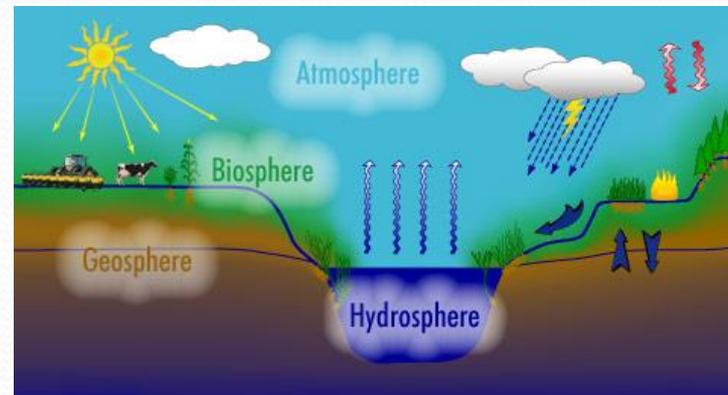
Prof. KALININ Mikhail



At first **nature** was created on Earth and later a **man** appeared.
Ancient scientists identified four environments: Earth, Water, Air and Fire.



In 19-th century new words appeared:
Lithosphere, Hydrosphere, Atmosphere, and Biosphere”.

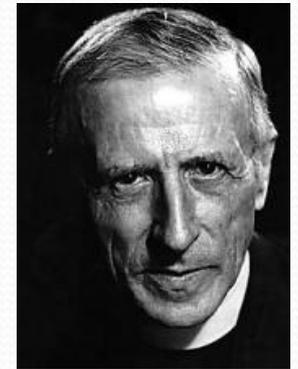
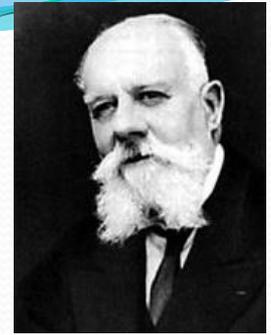


French mathematician and philosopher **Edouard Le Roy** introduced a notion of “**noosphere**” (*L'exigence idéaliste et le fait de l'évolution*, 1927)

Pierre Teilhard de Chardin: “once all nations would merge into an organic whole and then a man would be integrated with nature and God and biosphere would be transferred into a new state called by Lerua “noosphere””.

Russian geologist **V.I. Vernadsky** wrote: “During the last millennia we can observe an intensive growth.... of mankind influence on changes in biosphere. Under the influence of scientific ideas and human labor biosphere transfers into a new state –«noosphere»”.

«**Noosphere**» is sphere of **noos** ‘mind’ (Greek) or **mano-dhatu** (Sanskrit). In Sanskrit this term comes from manas (mind) + dhatu (world, sphere). That is the sphere or world of the mind or intellect.



V.I. Vernadsky:

*“We are in evidence and vitally take part in creation in biosphere of a new **geological** factor, unprecedented by power....”*

A man has such power that can change **Geosphere**, that is a Planet of Earth.

It's necessary to apply methods of investigation of a complicated system where all its spheres are full with life.





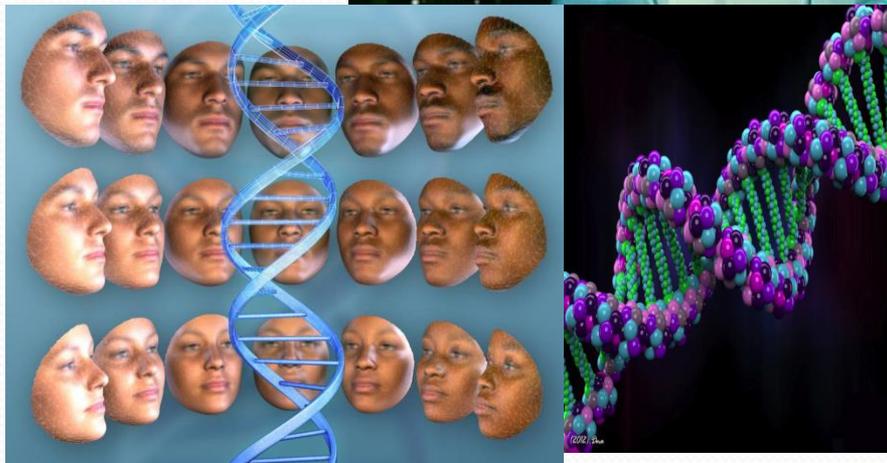
A man has not studied Earth till the end as an energy and informational system.

He tries to change it and more often in favor of himself.

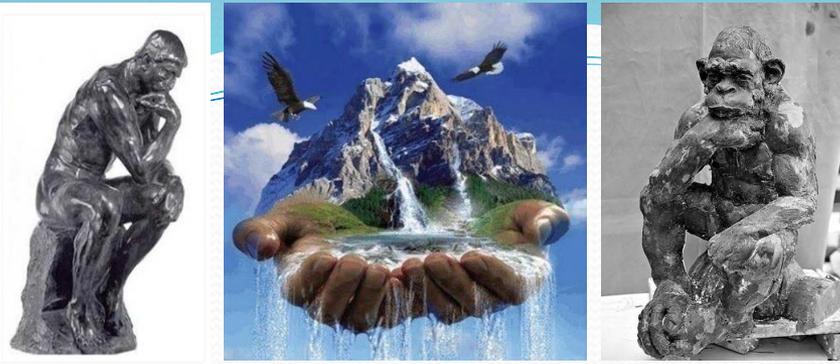


Environmentalists often behave as doctors.

A man is also a complicated one whole system, but medicine, for some reason, treats not a system, but tries to replace its separate parts.



Doctors either sew down borrowed organs into a body of a man with extraneous DNA.....



Mankind has not become a intelligent power and Earth has not become a NOOSPHERE.

The reason – is absence of necessary systematic knowledge.

A man in relation to nature behaves as a consumer.

He has a childish opinion that it will permanently provide him with everything necessary: pure water and air, food staffs etc.





During the last 20 years material damage is estimated in the amount of USD 63.2 billion.

During the same period a number of **natural catastrophes increased more than 5 times.**

They carry away thousands and millions of human lives; destroy cities, roads.....



Among natural catastrophes **62% fall at floods**, 36% at droughts, 2% at mudflows, snow glides and other emergencies.

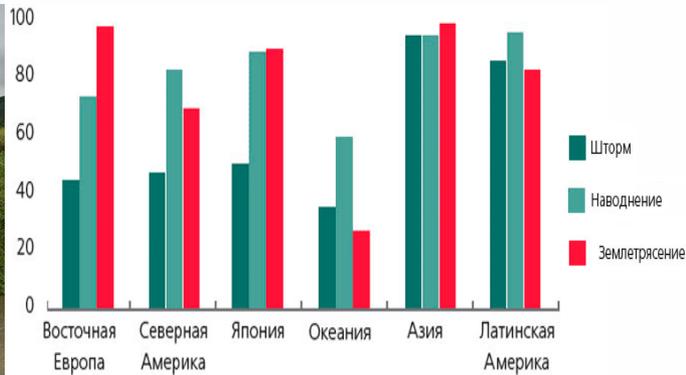


During the XX century about 10 million people perished during the floods

High damage is registered in the basins of great rivers.

“Unwise” land settlement of inundable territories causes not only increase in economical damages risks but also the necessity to provide safety of life activity of the population.

And this requires additional financial resources.



Classification of floods

According to classification of floods by range and damage, adopted in Belarus, all the floods are divided into 4 groups:

I – small floods, repeated once in 5-8 years

II – big floods, repeated once in 10- 50 years

III – notable floods, repeated once in 55-100 years

IV – catastrophic floods, repeated once in 100-200 years and scarcely.



Flood frequency

Catastrophic and Notable floods in Belarus were observed

- in 1845- in Pripyat river (rate of occurrence: **once in 600 years**);
- in 1931 – in Western Dvina, Dniepr, Berezina and Sozh rivers,
(flood frequency – **once in 300 years**);
- in 1958 – in Niemen and Schara rivers

Notable high waters and floods were observed on the following rivers

- Western Dvina - in 1878, 1929, 1941, 1951, 1956,
- Niemen - in 1886, 1931,
- Muchavets - in 1974, 1979,
- Dniepr, Berezina - in 1908, 1956, 1958,
- Sozh – in 1956, 1958, 1962, 1970,
- Pripyat – in 1888, 1895, 1900, 1932, 1958, 1974, 1979, 1999.



What is this?



The answer:

A park in Gippsland, Victoria state in Australia.

Millions of spiders run here escaping from pouring rains and flood threat. © [Fishki.net](#).

On the second photo - animals running out from the zoo in Georgia because of flood.

Nobody wants to die of flood.

A man can use animals and insects as monitoring means for upcoming natural catastrophes.



Old methods



When making prognoses the scientists and design engineers apply a number of hydrological observations with a duration of maximum 120 years.



These data is used to calculate prognosis water level in the river.

But the climate is changing fast and the old calculation methods need to change

Traditional, untimely and unefficient solutions



Example of “intelligent” and nontraditional solution

Experience from 1997, 2002 and 2006 floods in the Czech Republic

Exercise for testing time necessary for construction of a mobile wall developed after 2002 flood

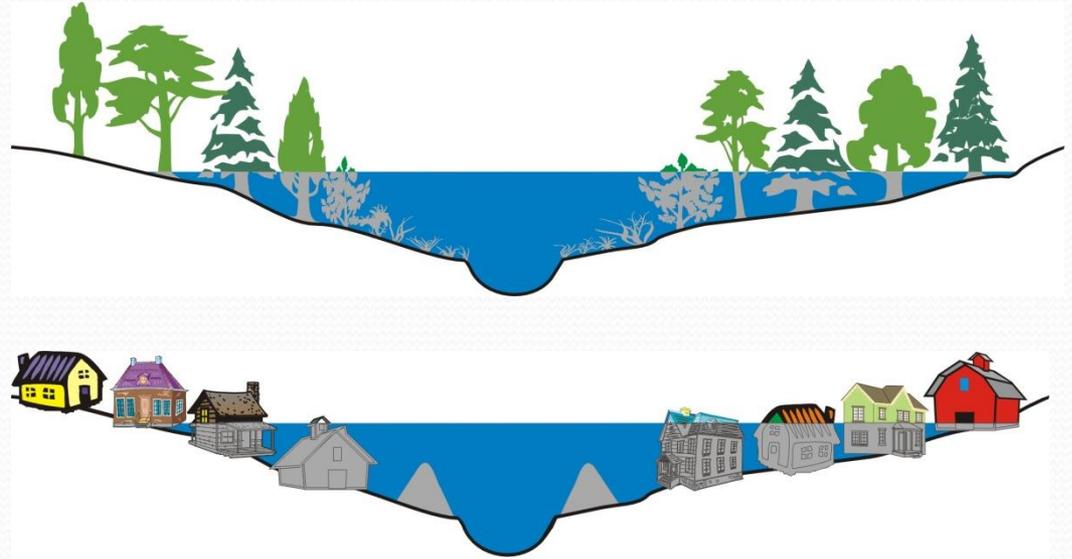


[Oldřich Novický]

Where to build cities ?

On this scheme:

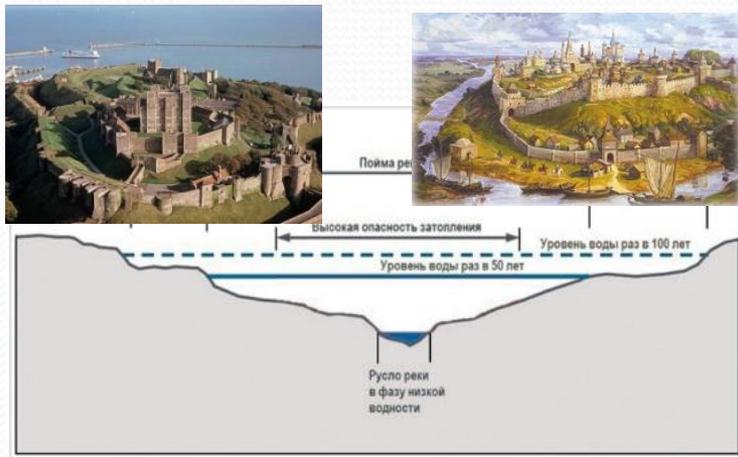
- riverbed
- river floodplain
- zone with high rate of water flooding
- zone with low rate of water flooding.



Question: where to build cities in order not to suffer from floods?

The answer: on a high river-bank.

And ancient people knew it.



Пример зонирования поймы реки



Conclusions:

- a man, having not studied the laws of Nature, continues to behave in relation to it as an irrational being;
- while calculating and designing automobile roads and railways, bridges.....design engineers apply outdated methods;
- biological indicators are rarely used;
- people in power are afraid to inform population about aroused danger of catastrophic events;
- frequency of catastrophic natural events increases.



Several practical recommendations:

It is necessary:

- to consider the whole water catchment area but not only parts of it;
 - to develop and apply new standards for bridges, flood walls, etc.;
 - to conduct detailed ecological feasibility studies while developing flood dangerous territories;
 - to increase, on a legislation level, responsibility of a person taking decisions about non-timely informing the population about coming catastrophic events.
-
- There is a need in new methods of calculation flood damages.
 - There is a need in new flexible flood insurance program.
 - Great attention should be paid to forehand informing the population about coming catastrophic events.



It is necessary:

- to develop unified state policy in the field of flood control, mechanisms of its implementation.....;
- to create and develop mechanisms regulating practical use of territories subject to floods, including administrative and economic measures;
- to develop scientific and technical, informational, regulatory and personnel support to antiflood activities;
- to improve and strengthen international and trans-border cooperation;
- long term strategy for flood prevention and flood protection which should cover the whole trans-border river basis..... It could help to compile a joint action plan.



Is it not time for a man to become intelligent creating “NOOSPHERE” which was spoken about by French scientists **Edouard Le Roy** and **Pierre Teilhard de Chardin** as well as Russian scientist **V. Vernadsky**?

