A few notes regarding origin of diamonds, water, natural gas and oil

Alexander N. Safronov

Obukhov Institute of Atmospheric Physics, Russian Academy of Sciences, Moscow, Russia

Collision with a comet

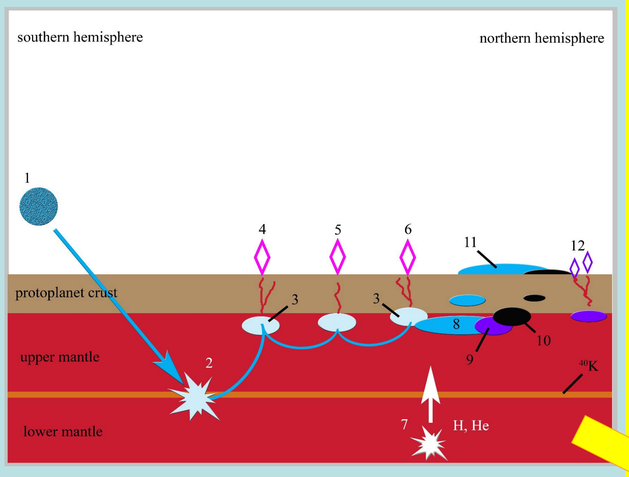

Figure 1. A diagram is drawn explaining the predominance of diamonds in the southern hemisphere of the Earth and oil and gas deposits in the northern hemisphere. (1) – collision of a comet with the protoplanet of Earth. The comet falls to the surface of the protoplanet at a grazing angle; (2) – primary explosion of the comet after hitting the ^{40}K nuclear layer; (3) – spasmodic movement of the plasma cloud formed by the comet's products such as CO_2, CO, and C; (4-5-6) – diamonds deposits. Regular arrangement of diamond deposits occurs due to the linear and spasmodic movement of cometary derbies; (7) – a secondary deep explosion of the inner nuclear layers of the protoplanet with the release of a large amount of H and He, creation of the Earth, and separation of the Moon; (8) – water synthesis (H_2O); (9) – methane deposits formation (CH4); (10) – formation of oil fields; (11) – the release of water and oil onto the surface of the already existing planet Earth; (12) – formation of secondary type of diamonds from methane vapor in the northern hemisphere.

The worldwide flood at the galactic storm

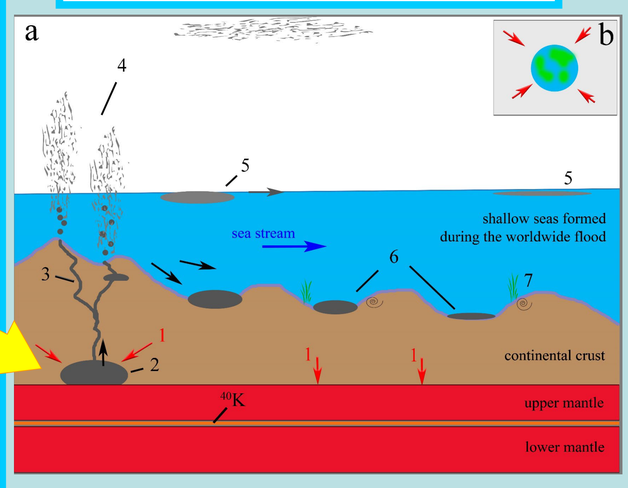

Figure 2. (a) – The diagram shows the syntheses of abiogenic ("inorganic") and sedimentary–migratory ("organic") gas and oil fields during galaxy storms; (b) – a galactic storm with the burning of the inner nuclear layers of the earth, heating and compressing the Earth. The following objects are indicated by numbers: (1) – the compression of the planet due to the burning out of the inner nuclear layers of the earth. This process is accompanied by the formation of shallow seas on the surface of the continental plates; (2) – the oldest deep gas-oil deposits as a result of a collision with a comet impact ("primary" gas-oil deposits); (3) – gas and oil rise through geological cracks and pipes (similar to kimberlite pipes); (4) – gas fraction of hydrocarbon products; (5) – is the lightest fraction of oil floating on the sea surface and widely distributed in the waters of the World Ocean. (6) – medium and heavy fractions of oil transported over a limited distance and deposited at the bottom of newly formed shallow seas; (7) – fossils of difference biological organisms that lived in the shallow seas during this time period, including fossil layers of methanotrophic bacteria. Thus, small but numerous "biogenic" gas-oil deposits are formed as a result of the deposition of fractions of hydrocarbon products mixed with organic residues located at the bottom of shallow newly formed seas and later covered with layers of clay.

Abstract

This study investigated the origin of water, natural gas and oil, as well as diamonds. In this paper it has been shown that diamonds, water, oil and natural gas on Earth were formed as a result of a thermal nuclear explosion following the collision of a comet with the surface of a protoplanet at a right angle. The hypothesis proposed by the authors is the only one explaining the predominance of diamond deposits in the southern hemisphere and oil and gas deposits in the northern hemisphere. It was explained why the spatial distribution of diamond deposits forms pronounced linear or circular spatial clusters. Two types of diamond deposits and four types of gas and oil deposits were identified in this study. The recommendations for the search for these deposits have been specified.

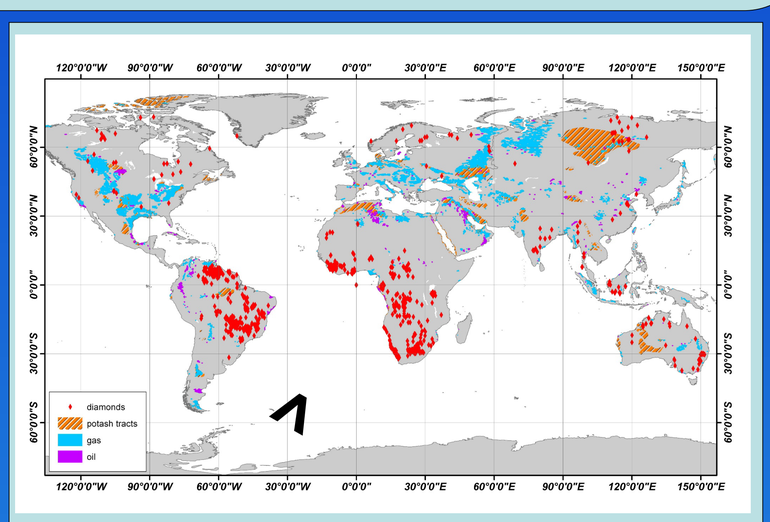

Figure 4. The spatial distribution of oil, gas and diamond deposits is shown. In addition, the Figure shows vast areas occupied by potash tracts (K_2CO_3), which are markers of the deep explosive nuclear process during a collision with a comet. The diamond deposits predominate in the southern hemisphere (South Africa and South America), while oil and gas deposits predominate in the northern hemisphere.

Diamond synthesis and the problem of free carbon

$$CO_2 \rightarrow C + 2O$$
$$CO_2 \rightarrow C + O_2$$
$$CO_2 \rightarrow CO + O$$
$$2CO_2 \rightarrow 2CO + O_2$$
$$CO_2 + C \rightarrow 2CO \qquad (1)$$

$$CO_2 + 4Na \rightarrow 2Na_2O + C$$
$$CO_2 + 2Mg \rightarrow MgO + C$$
$$CO_2 + 2Al \rightarrow 2AlO + C$$
$$3CO_2 + 4Al \rightarrow 2Al_2O_3 + 3C$$
$$3CO_2 + 2Al \rightarrow Al_2O_3 + 3CO$$
$$CO_2 + Si \rightarrow SiCO_2$$
$$3CO_2 + 2P \rightarrow P_2O_3 + 3CO \qquad (2)$$

$$CO + Fe \rightarrow FeO + C$$
$$CO + Fe \rightarrow FeCO$$
$$2CO + 3Fe \rightarrow Fe_3C + CO_2$$
$$5CO + Fe \rightarrow Fe(CO)_5$$
$$6CO + Fe \rightarrow FeC_3 + 3CO_2 \qquad (4)$$

$$C + Fe \rightarrow FeC$$
$$C + 2Fe \rightarrow Fe_2C$$
$$C + 3Fe \rightarrow Fe_3C$$
$$3C + 4Fe \rightarrow Fe_4C_3 \qquad (5)$$

Present world at the galactic calm

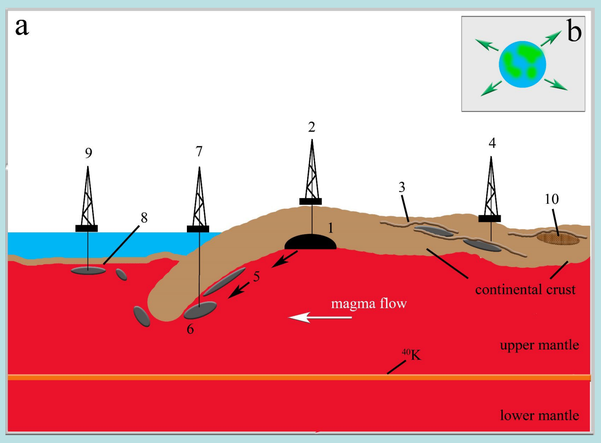

Figure 3. (a) – There are four main types of gas–oil fields; (b) – our planet is in a state of galactic calm. The following objects are indicated by numbers: (1) – primary gas and oil fields formed during a collision with a comet (synonyms: "inorganic" or "abiogenic" gas-oil deposits); (2) – deep mining of geothermal ("inorganic") oil; (3) – secondary migrating ("biogenic") gas and oil deposits in shallow sedimentary layers; (4) –extraction of "biogenic" oil; (5) – natural gas and oil migrate under the influence of magma flow; (6) – "captured" gas and oil fields in the subduction zone; (7) – offshore oil production; (8) – gas–oil of the high seas; (9) –offshore gas and oil production using floating oil platforms; (10) – degraded sedimentary gas–oil deposit.

Synthesis of water, oil and gas

The reactions that lead to the formation of water, oil and natural gas are well known. Let's introduce them. The Carl Bosch reaction describes the interaction of CO_2 and H_2 during the catalysis of Fe, Co, Ni to form water (Equation 6):

$$\begin{array}{l} CO_2 + H_2 \rightarrow CO + H_2O \\ \underline{CO + H_2 \rightarrow C + H_2O} \\ CO_2 + 2H_2 \rightarrow C + 2H_2O \end{array} \qquad (6)$$

In addition, the Paul Sabatier ratio between CO_2 and H_2 during of Al_2O_3 catalysis can lead to the formation of water and methane (Equation 7):

$$CO_2 + 4H_2 \rightarrow CH_4 + 2H_2O \qquad (7)$$

As a result of the interaction of CO_2 and H_2O with the formation of molecular oxygen, various hydrocarbons can be obtained (Equation 8):

$$CO_2 + H_2O \rightarrow H_2CO_3$$
$$2CO_2 + 2H_2O \rightarrow 2C_2H_4 + 3O_2$$
$$4CO_2 + 2H_2O \rightarrow 2C_2H_2 + 5O_2$$
$$6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$$
$$7CO_2 + 4H_2O \rightarrow C_7H_8 + 9O_2 \qquad (8)$$

Many researchers believe (see the literature given above in the Introduction) that oil is formed as a result of the Fisher–Tropsch reaction between CO and H_2 (at n>1). Note that this process also includes the formation of water (Equation 9):

$$n\,CO + (2n+1)\,H_2 \rightarrow C_nH_{2n+2} + n\,H_2O$$
$$n\,CO + 2n\,H_2 \rightarrow C_nH_{2n} + n\,H_2O \qquad (9)$$

At n=1, the CO and H_2 reaction equations give various hydrocarbons, including C, CH_2, and CH_4 (Equation 10):

$$CO + H_2 \rightarrow C + H_2O$$
$$CO + 2H_2 \rightarrow CH_3OH$$
$$CO + 2H_2 \rightarrow CH_2 + H_2O$$
$$CO + 3H_2 \rightarrow CH_4 + H_2O$$
$$2CO + H_2 \rightarrow CH_2 + CO_2$$
$$2CO + 2H_2 \rightarrow CH_4 + CO_2 \qquad (10)$$

Banana equivalent dose

Figure 5. Banana equivalent dose (BED) is often correlated to 10^{-7} sievert (0.1μSv); Potassium-40 (^{40}K) is a long lived naturally occurring radioactive isotope of potassium with half-life of 1.251(3) billion years (Ga). Thus total life-time is equal to 2.502 Ga.

Note that the Sun has a weak reactor and can synthesize mainly light elements such as hydrogen and helium. Since, according to opinion of most geophysicists, the Earth does not have own reactor, so the decay time of potassium-40 gives the upper limit of the existence of our planet.

$$C + 2H_2 \rightarrow CH_4$$
$$C + H_2 \rightarrow CH_2$$
$$4C + H_2 \rightarrow 2HC_2$$

The left part of Figure 1 shows a general scheme for the synthesis of other types of diamonds (methane-forming diamonds); they are shown in purple in Figure 1. According to the author, this type of diamond is determined by blowing a mixture of carbon dioxide and methane through kimberlite pipes (Equation 13):

$$CO_2 + CH_4 \rightarrow 2C + 2H_2O \qquad (13)$$

Major types of oil and gas deposits

p1. The first type of oil deposits is deep deposits of oil and gas, which are the results of the interaction of comet fragments with hydrogen formed in the terrestrial nuclear Th-U layers;

p2. The second type of deposits is sedimentary deposits formed as a result of oil being squeezed to the surface during the compression of a galactic storm and dispersed by the currents of shallow seas also formed during these galactic storms;

p3. The third type of oil deposits is subduction deposits of oil and gas, which were formed as a result of the fact that magmatic currents during galactic storms carried part of the deep oil deposits into the subduction trap zone;

p4. The fourth type of deposits corresponds to oil and gas deposits in the open sea. Deposits of this type are located far from the edges of the old continents. These deposits, like those of the previous type, were carried out by magmatic flows, but they did not encounter subduction traps on their way.

Major types of diamond deposits

d1. The first type of diamond deposits are deposits that are mainly located in the Southern Hemisphere, in South Africa, India, Antarctica, and South America. In these deposits, diamonds were formed as a result of the explosion of the comet itself, that is, before the explosion of the Th-U nuclear layers and the formation of the H, He isotopes. Since these diamonds are formed before the synthesis of water, methane, and oil, such diamonds can be described as "dry" or "cometary" diamonds.

d2. The second type of diamonds is diamonds that were formed after the explosion of the underlying Th-U layers. According to the author, this type of diamonds is formed from a mixture of carbon dioxide and methane. These diamonds, which are mainly mined in the northern hemisphere, are smaller and may contain various impurities, including water, rare earths and transuranic elements.

Conclusions

Most of the chemical reactions listed above in Equations (1)–(13) are well known, and some of these reactions, such as those of Carl Bosch, Paul Sabatier, and Fischer–Tropsch, were discovered in the century before last. The formation of hydrogen, deuterium, and helium isotopes ^{3}He and ^{4}He in the bowels of the planet was predicted earlier in the pioneering work of Herndon and colleagues. Thus, the author's contribution is to suggest the possibility of a protoplanet colliding with a comet, followed by the activation of a thermal nuclear explosion.

Thus, the ^{40}K hot nuclear layer located near the surface of the planet is a key link in a new theory of seismology, volcanology, and subduction. Upon collision with a comet, the Moon separates, the monocontinent Rodinia is formed, and terrestrial and lunar ores, diamonds, water, oil and natural gas are formed. The nuclear layers of K-Sr-Cs-Pb-Th-U determine the internal stratification of our planet, therefore, the concept of the mantle-core of the Earth's structure and the statement about the solid inner core of our planet undoubtedly require revision.

Therefore, this theory is the only theory explaining why diamond deposits predominate in the southern hemisphere (South Africa and South America), while oil and gas deposits predominate in the northern hemisphere. The spatial distribution of oil, gas, and diamond deposits is shown in Figure 4.

1. Safronov, A.N. “The Basic Principles of Creation of Habitable Planets around Stars in the Milky Way Galaxy”. // *International Journal of Astronomy and Astrophysics*, 2016, **6**, 512-554.
2. Safronov, A.N. “Theory of the Origin of Terrestrial and Lunar Ores”. // *International Journal of Geosciences*, 2023, 14, 547-583.
3. Safronov, A.N. “A few notes regarding origin of diamonds, water, natural gas and oil // *Open Journal of Geology*, 2025, 15, 309-330.