Driving Force of Earth Plate Motion

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Abstract
I suggest that the source of this force is the Earth tides, specifically the Tide lever crack and Tide lever push work.

Introduction
I suggest a new mechanism for the force that moves continents. This force, which moves the plates of the Earth, is the same force that splits Supercontinents, creates oceans, and forms giant mountain ranges.
I suggest that the source of this force is the Earth tides, specifically the Tide lever crack and Tide lever push work.

1. Ocean Tides
The Earth’s ocean tides are a complex result of the gravitational forces of the Moon and the Sun. For convenience, I will describe them as resulting from the gravitational force of the Moon."

![Fig1 Zero ocean tide.](image1)

![Fig2 High ocean tide.](image2)
2. Earth Tide

Fig. 3 Zero Earth tide

Fig. 4 High Earth tide

3. Tide of Earth interior

Fig. 5 Zero Earth tide

Fig. 6 High Earth tide
4. Variation of plate boundary by Earth rotation

*Fig 7* Earth rotation

*Fig 8* Earth rotation

*Fig 9* Earth rotation

*Fig 10* Earth rotation

*Fig 11* Variation of plate boundary cycle by Tide, Rotation

5. Mechanism of formation Ocean ridge and seafloor spreading
Fig 12 Low tide, Supercontinent.

Fig 13 High tide, Supercontinent upper tension.

Fig 14 Low tide, Supercontinent lower tension.

Fig 15 High tide, Supercontinent upper tension, Increase fatigue.

Fig 16 Low tide, Supercontinent lower tension, Increase fatigue.

Fig 17 High tide, Supercontinent surface crack, Start fatigue failure.
Fig 18 Low tide, Supercontinent lower crack.

Fig 19 High tide, Supercontinent upper crack increase.

Fig 20 Low tide, supercontinent lower crack increase.

Fig 21 High tide, Supercontinent upper crack increase, Earth plate separation.

Fig 22 Low tide, Supercontinent lower magma intake, Formation plate boundary.
**Fig 23** High tide, Magma cooling.

**Fig 24** Low tide, Magma intake, Formation sea.

**Fig 25** High tide, Rising magma in plate boundary, Magma cooling.

**Fig 26** Low tide, Magma intake, Rising magma in plate boundary, Formation seafloor.

**Fig 27** High tide, Rising magma in plate boundary, Magma cooling, Seafloor spreading.

**Fig 28** Low tide, Magma intake, Rising magma in plate boundary.
**Fig 29** High tide, Rising magma in plate boundary, Magma cooling, Seafloor spreading.

**Fig 30** Low tide, Magma intake, Rising magma in plate boundary.

**Fig 31** High tide, Rising magma in plate boundary, Magma cooling, Seafloor spreading.

**Fig 32** Low tide, Magma intake, Rising magma in plate boundary.

**Fig 33** High tide, Rising magma in plate boundary, Magma cooling, Seafloor spreading.
Fig. 34: The current state of the Mid-Atlantic Ocean Ridge area.

6. Plate lever working mechanism.
Fig. 35 Plate lever working mechanism

a: width of the continent
b: thickness of the plate
c: height of earth tide 25cm(10cm-50cm)
d: plate push length
e: pull force by tide
f: plate push force by lever work

7. The speed of Continental drift and Amplification of force

7-1 d2 at the time of supercontinent crack
a=4000km
b=7km
\(a:b=4000\text{km}:7\text{km} = 571:1\)
a:b=c:d
c=250mm(100~500mm by latitude)
d=0.437mm
d2=0.87mm/cycle
1day(2cycle)=1.75mm
638mm/yr

7-2 d2 at current
a=6500km.
b=5km
\(a:b=c:d=1300:1\)
c=250mm(100~500mm by latitude)
d = 0.2mm
d2=0.4mm
1day(2cycle)=0.8mm/
292mm/yr

7-3 At the time of continental rift the force of plate ridge push
if tide force c=1 then F(ridge push force by lever work)=571time

7-4 Current the force of plate ridge push
if tide force c=1 then F(ridge push force by lever work)=1300time

8. CONCLUSION

• Depending on the values of a (width of the plate) and b (thickness of the oceanic
  crust), slightly different results may be obtained, but the ridge push force is
  amplified sufficiently by the tide lever effect, at least 500 times and over 1300
  times, so it becomes strong enough to split and move continents.

• The tide gap (d2) between the two continents A and B is calculated to be an
  average of 1.4mm/day (0.408m/yr), by substituting the thickness of the oceanic
  crust and the width of the continent into the above conditions. Assuming that the
  two continents A and B are moving away from each other at this speed and
  substituting the width of the Atlantic Ocean, 5000km. The crack of the continent
  (Gondwana) is only 12.5 ma, so the speed of continental drift is too fast. 12.5 ma is
  1/18 of the age of the Atlantic Ocean (230 ma).
  This is interpreted as a decrease in the speed and distance of the continents
  moving away from each other to 1/18, due to various variables such as resistance
  (drag) of the continent, elasticity of the continental crust, viscosity of magma,
  delay due to the revolution of the moon, cancellation of tides by the sun,
  movement of the axis of Earth’s rotation, and the variety tidal force by latitude

• It is expected that D2 can be measured at intervals of 12 hours in the Afar
  Depression (Great Rift Valley) and a range of 1/10mm to 1/100mm/cycle is
  proposed due to various variables.

• For the magma rising to the seafloor to cool and solidify, it must rise to a higher
  position than the already created oceanic crust. Therefore, the seafloor gradually
  rises towards the ridge side.

• In the early stages of the formation of the seafloor, the resistance of the
  continent was low, the elasticity of the continent was greater than it is today, and
the width (a) of the plate was smaller than it is now, so it is speculated that the seafloor spreading rate was faster than it is now.

*Table type mountain, which is mainly distributed along the eastern coast of Latin America and the western coast of Africa, is interpreted as a trace of cracks on the Supercontinent (Gondwana).

**Reference**
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Mantle convection theory. Arthur Holmes (1929)
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