



A new hypothesis that contributes to the formation of cold sludge volcanoes and fluid outlets in tectonic seabed & terrestrial regions; with its helpful interpretation for time fracture sequence of fault segments

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Virus and bacteria are not responsible for Environmental Pollution



introduction

- In sedimentology : Vacuum presence is emerge when material rupture occur in a space-free environment under short time force load conditions. Weak force loading in long time is let to elongation of material without vacuum keeper cavity (for sediments).

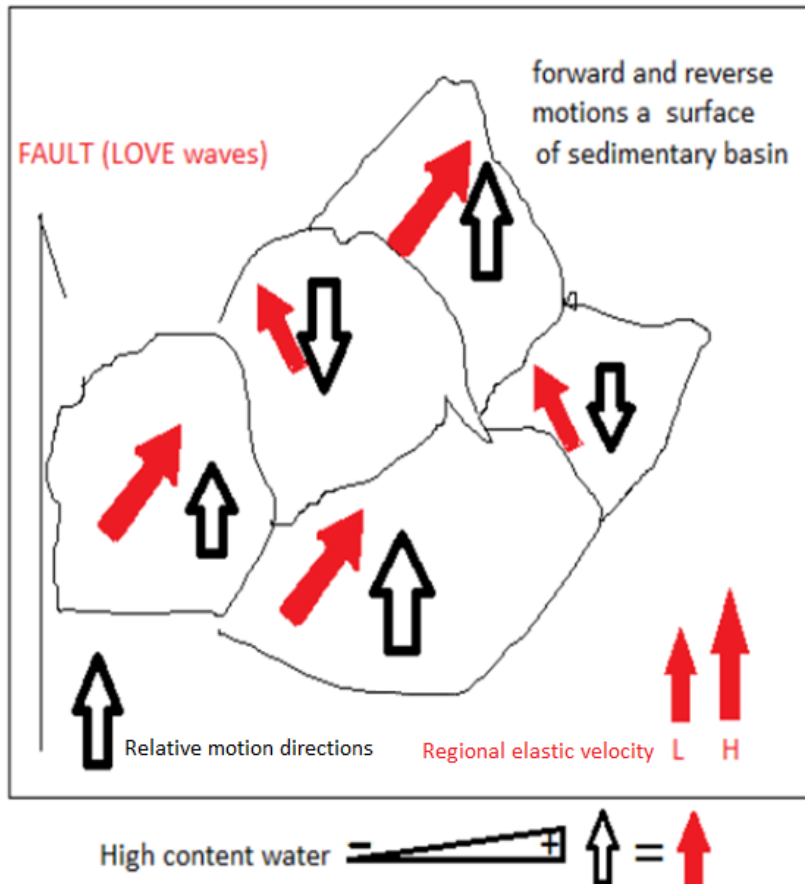


Fig1 surface Love waves and regional deformations

Sediment motions during underwater earthquakes : Vertical S-wave is not able to presence self motion under deep water, because its supressor is Liquid weigth responce of instantenous total water mass in the basin. But lateral S-wave (love) also known as Q-wave is able to forming on sediment surface at underwater. Movements are create instantenous fructures at the sediments where the some differentiated opposite directions occur with permanent or unpermanent sediment cracks. (or surfacial faults) In convenient conditions, they create vacuum and later , gaps fillings occur with water and sludge from surrounding sediments. Wrench fault systems is capable to create biggest sludge reservoirs at along the fault. When tectonic forces create compressional regime at the same reservoir , cold sludge type mud volcanoes and fluid outles occur.



Description record of Leonardo da Vinci about earthquake observation at Antalya (Turkey)

Jean Paul Richter 1880 The notebooks
of Leonardo da Vinci

Edward Maccurdy 1938 The notebooks
of Leonardo da Vinci vol1p359

In eighty-nine [the year 1489] there was an earthquake in the sea of Satalia near to Rhodes, and it opened the depths of the sea and into the opening that was made such a torrent of water was poured that for more than three hours the bed of the sea lay bare because of the water which had been lost from it, and then it closed up again to its former level. Whatever changes may occur in the weight of the earth the surface of the sphere of waters will never cease to be equidistant from the centre of the world.

SELF—PORTRAIT
Royal Library, Turin

(his observation or he is sure about observers)

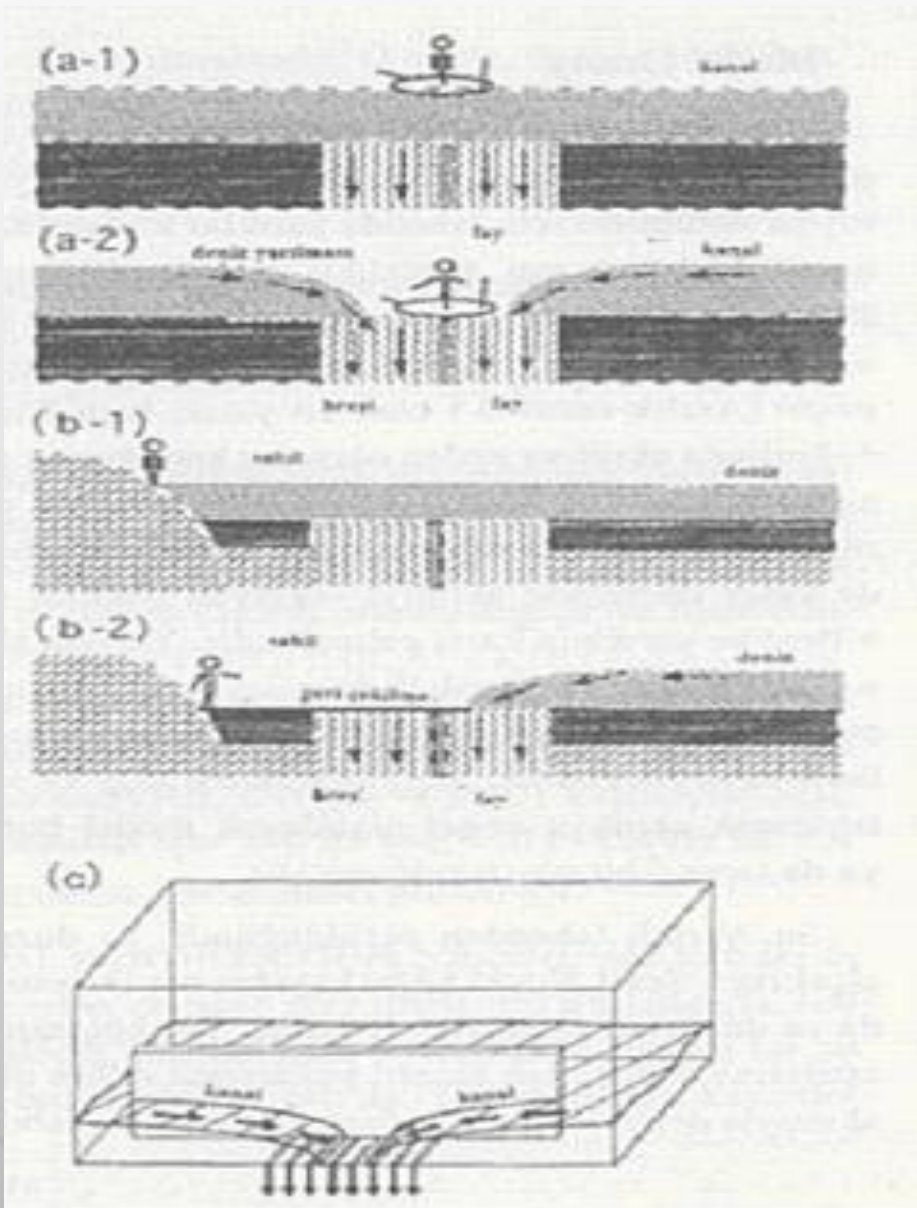


Fig 3 High vakuum with air wedge on sea surface, in 2011 Japan Earthquake aftershocks, the principle was same as Leonardo's description


It is not a circular whirlpool !

Circular whirlpools mostly water current related

<https://www.youtube.com/watch?v=Bvi44Cptqw>

- Fig 2 1999 Izmit Earthquake ; 2 fishermen observation of sea surface on Izmit Bay event occurred via high vacuum force
 a) on top of North Anatolian Fault at sea
 b) shoreline observation ikeya et all 2002

What is fracture vacuum for seafloor?

- Some of the block members of main fault moves with much different velocities during tectonic rupture, or sediment masses blown in different directions with effect of 'love waves' (only able seismic S-wave type with P-wave in underwater conditions)
- A sudden gap occurs via pulling whole liquid / particular material down fast; different from gravitational force.
- It is most quick way to provide water conduction to asthenosphere for reprocessed mineralization.  Item supports similar to Cai (2008)
- It can change physical equilibrium of sediments after liquid intake, and restarted tectonic loads provide clay sludge jets in the gates of fault walls.

under tectonic conditions, similarity of hard and more soft material physical interaction with water

PHYSICAL GEOGRAPHY

Leonardo da Vinci

That there are springs which as a result of earthquakes or other unforeseen causes suddenly burst forth and as suddenly fail. And this happened in a mountain in Savoy where certain woods sank in and left a very deep abyss; and at about four miles distance from there the ground opened on the slope of a mountain and threw out suddenly an immense flood of water, which swept through a whole valley of tilled fields vineyards and houses and did irreparable damage wherever it spread.

That there are many springs which come to fail suddenly: and this happens through some subsidence in a cavern that is pent up within the body of the earth whereby the passage of the said springs is blocked and hindered.

similar events apply to continuity of: mud volcano or fluid outlets

That there are many springs which spring up suddenly and are permanent; and this occurs when some river in its long course has worn away so much of the mountain that it bursts open springs of water which have a passage there; it may also occur as I said before when a cave has fallen in ruin and blocked up a spring, so that its water has been forced up to such a height in this cavern that it reaches the level of some fissure in the rock and so has made its escape, creating a new river.

similar events apply to continuity of:
mechanism under displacing pockmark strings ?

Main-rock Deformation and its reflection to soft sediment topography

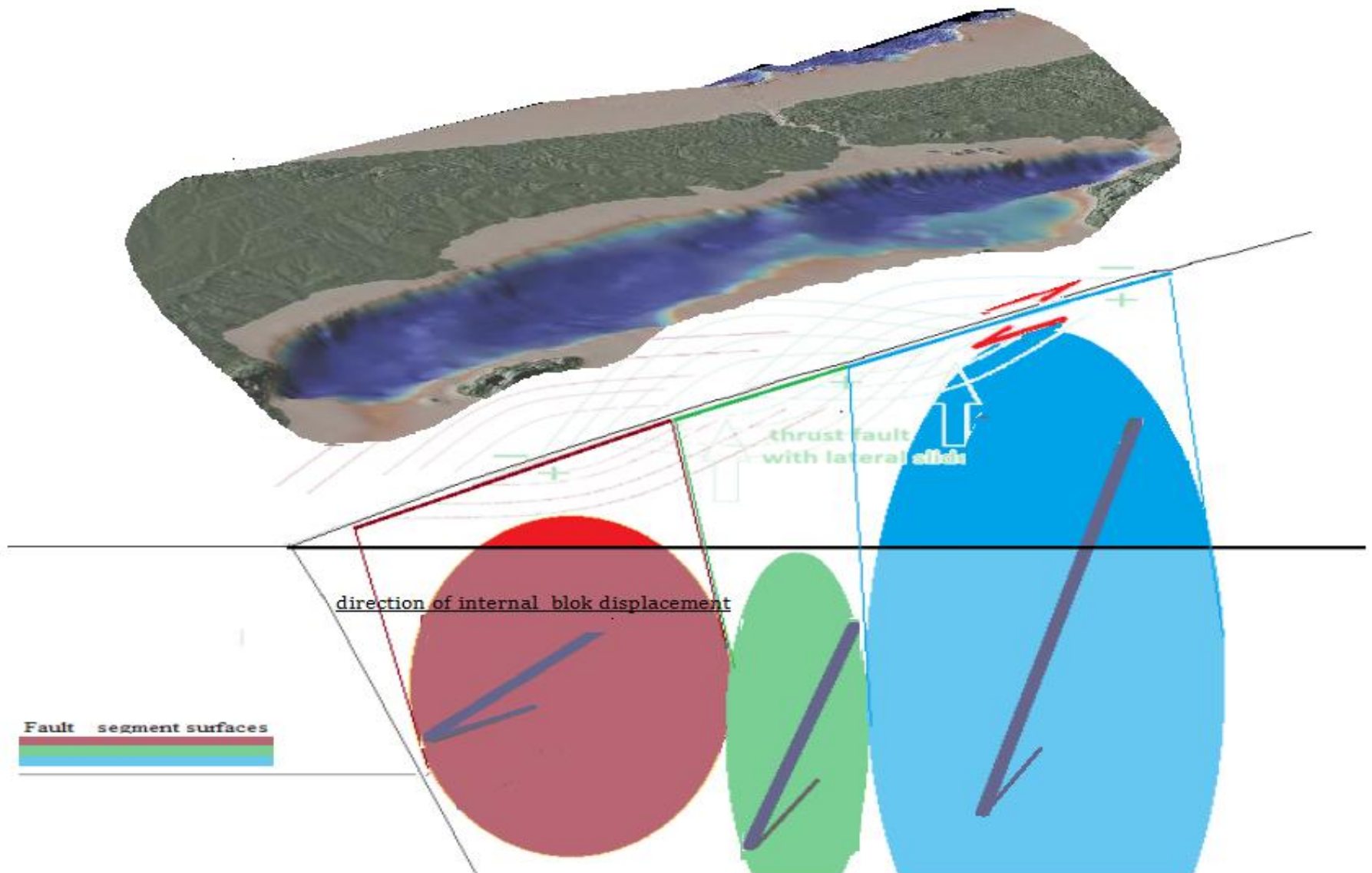


Fig 4 Development of the vertical shear zones in rotational upper basinal sediment mass of NAF

Development of a shear zones in instantenous deformation levels

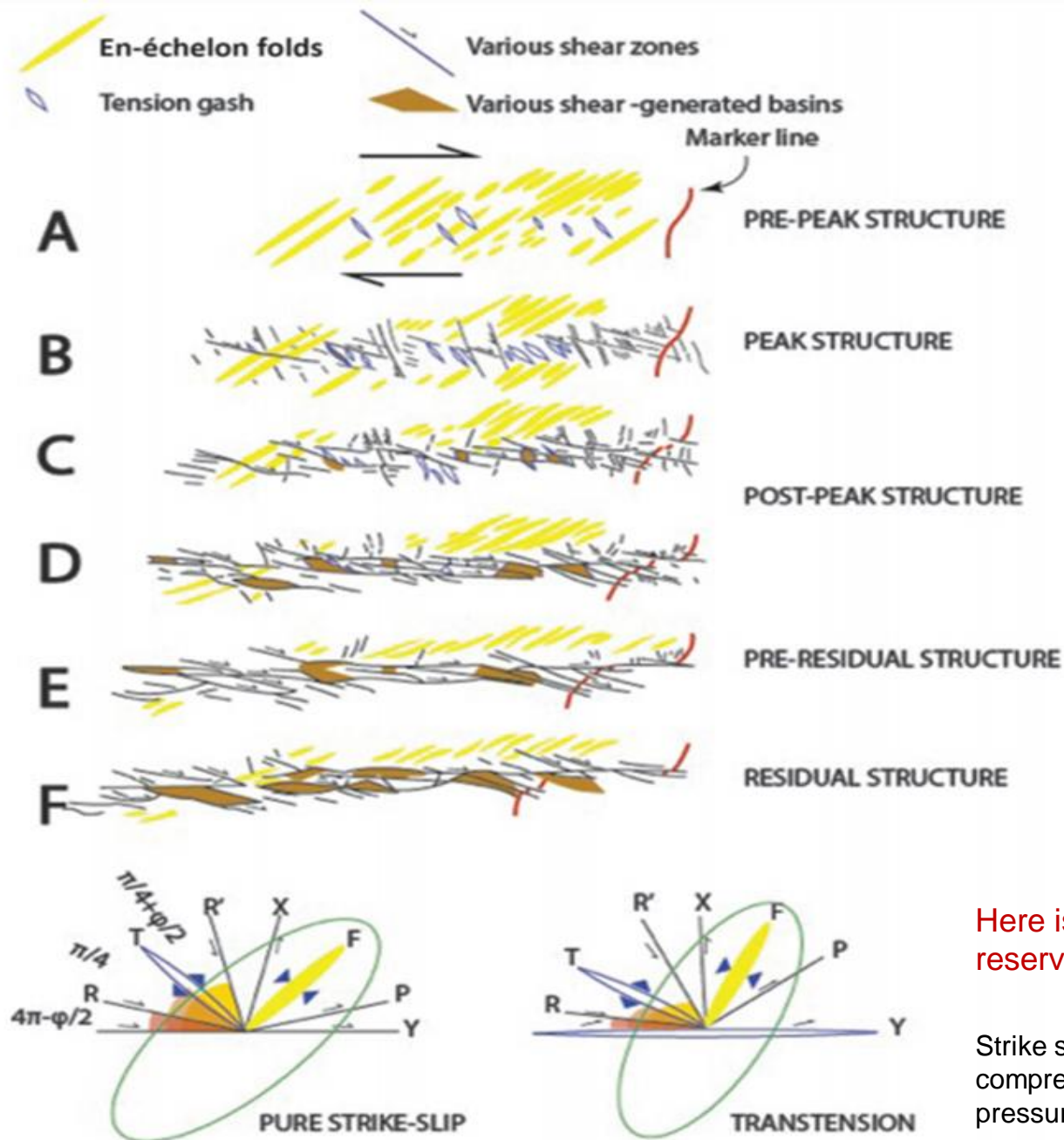
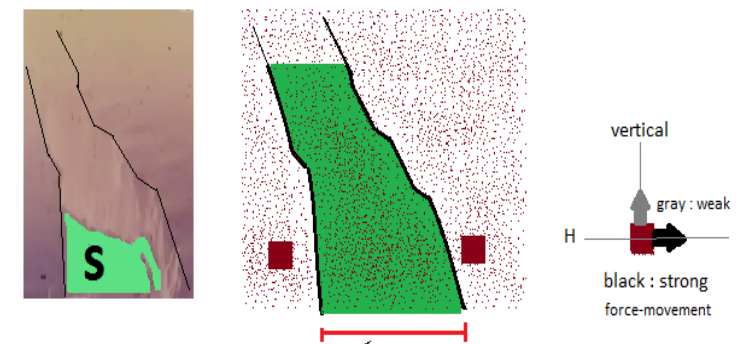


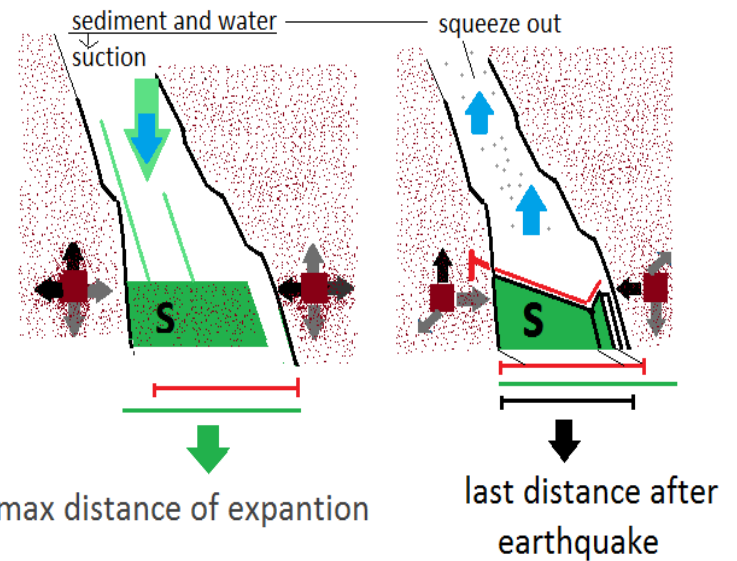
Fig 5 Development of a shear zone Sengör 2014. original explanation Brown areas are structures associated with extension and (or) transtension Key to lettering: F is fold axial trace; P is P shear; R is a Riedel shear; R' is an anti-Riedel shear; T is a tension gash X is an X, Y is Y shear; ϕ is the angle of internal friction of the material being sheared.

Here is long period internal sludge reservoir generation starting at stage A

Strike slip fault zone - extentional and compressional regimes have similar relative pressure regions at different scales



length of rupturing material



S hanged sediment block in japan trench after great east Japan earthquake 2011 (Tohoku-oki)

Tohoku -oki earthquake related fissure (sediment surface fault) at 5000 meter east of Sanriku coastline (japan) video-photo :JAMSTEC

Fig 6 Fissure and sediment dynamics after 2011 great Tohoku-oki earthquake (sediments and water vacuumed in to fissure)

Where the instantaneous or permanent regional fault openings occur with vacuum effect?

Around of

- Major and secondary Riedel faults
- Strike-slip (lateral) faults of rotational block regime
- Crust subduction or collision area
- Listric faults
- Magmatic rise and rift propagation
- Slow creep movement deform to sediments

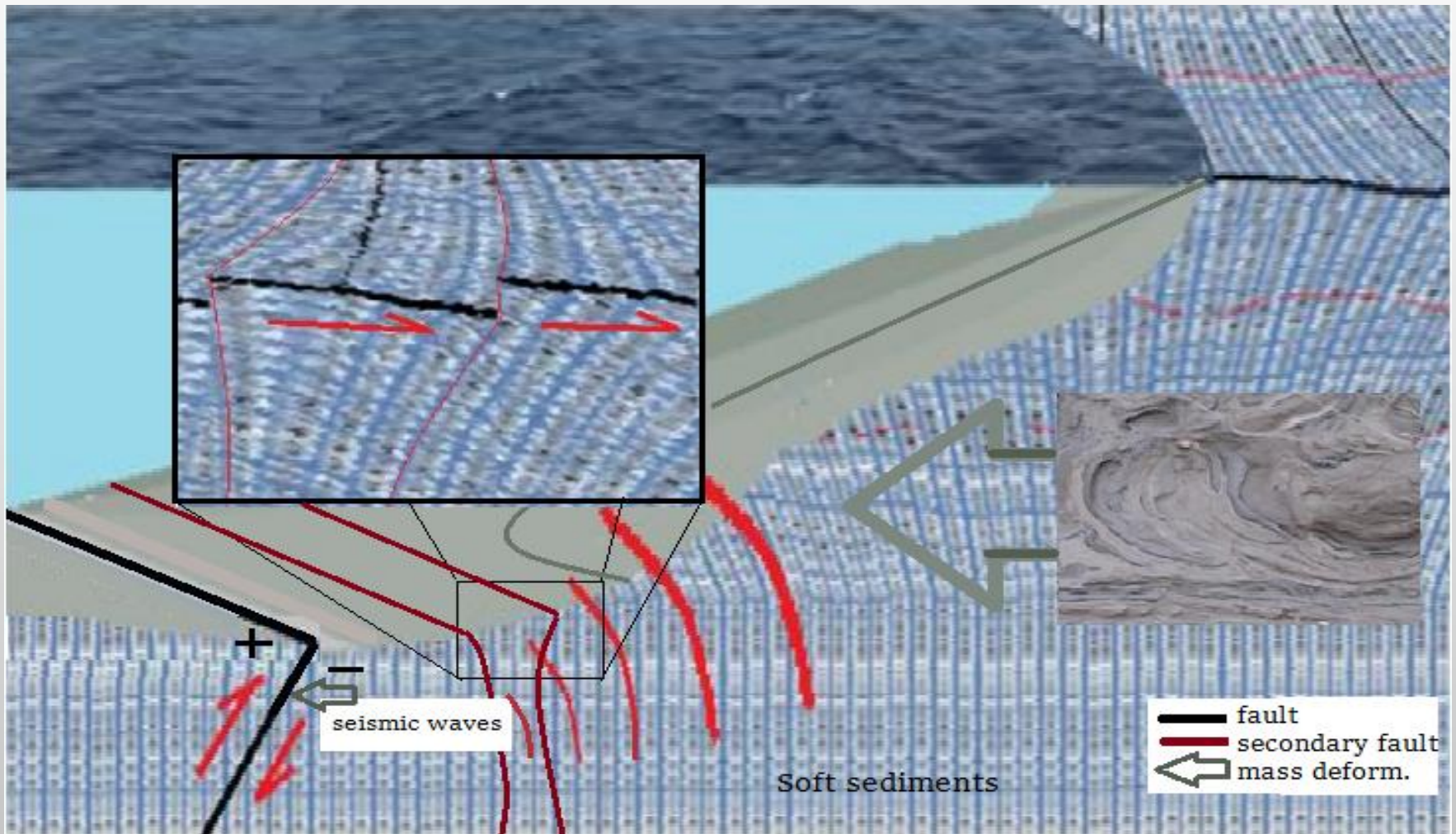


Fig 7 Soft sediment deformation & cracks (Picture of folded sediments Emin Demirbag)

- S waves with amplitude on the vertical axis do not occur in sediments under sufficient water depth during ground shaking, but S waves with horizontal amplitude (Love or Q Waves) is forming. Sediment ruptures and deformed sedimentary material accumulation occur as the form of lystric faults at the borders of their dominant regions.

Effects during separation

- High vacuum and sediment suction first
- Sediment and internal wall material suction with water
- At shallow sea, water separating as two piece of parallel walls
(Notes of Leonardo da Vinci 1489 and Ülkü Ulusoy 2002 for 1999 İzmit Earthquake, 2011 Japan Earthquake video)
- New scientific problem here for tsunami wave generation (sudden opening suction gate how effectible on tsunami wave form)
- Shallow regions can let to air intake to gap
- Gap occurrence can pull petroleum and gas hydrogels, or can help to their formation activity.

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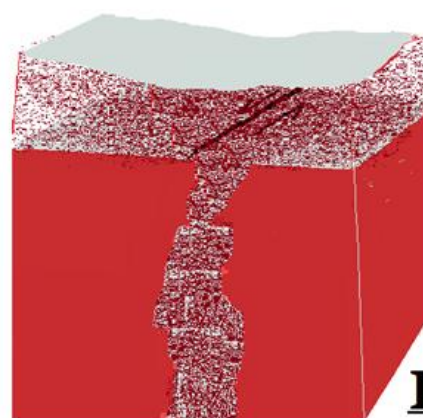
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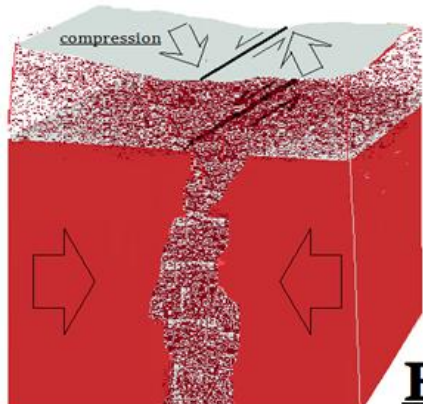
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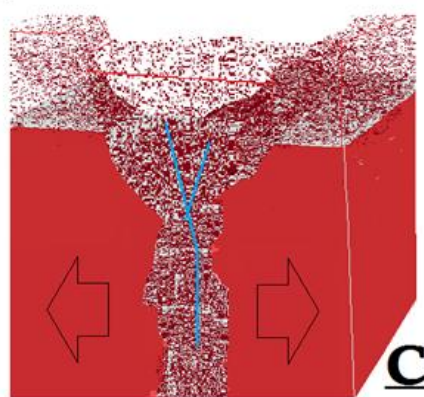
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A	Sedimentation
B	Elasto-plastic & plastic age
C	Ruptured fault filled with clay & water
D	Sedimentation & smooth topography with erosion
E	Compression begin
F	Compression with mud leakage

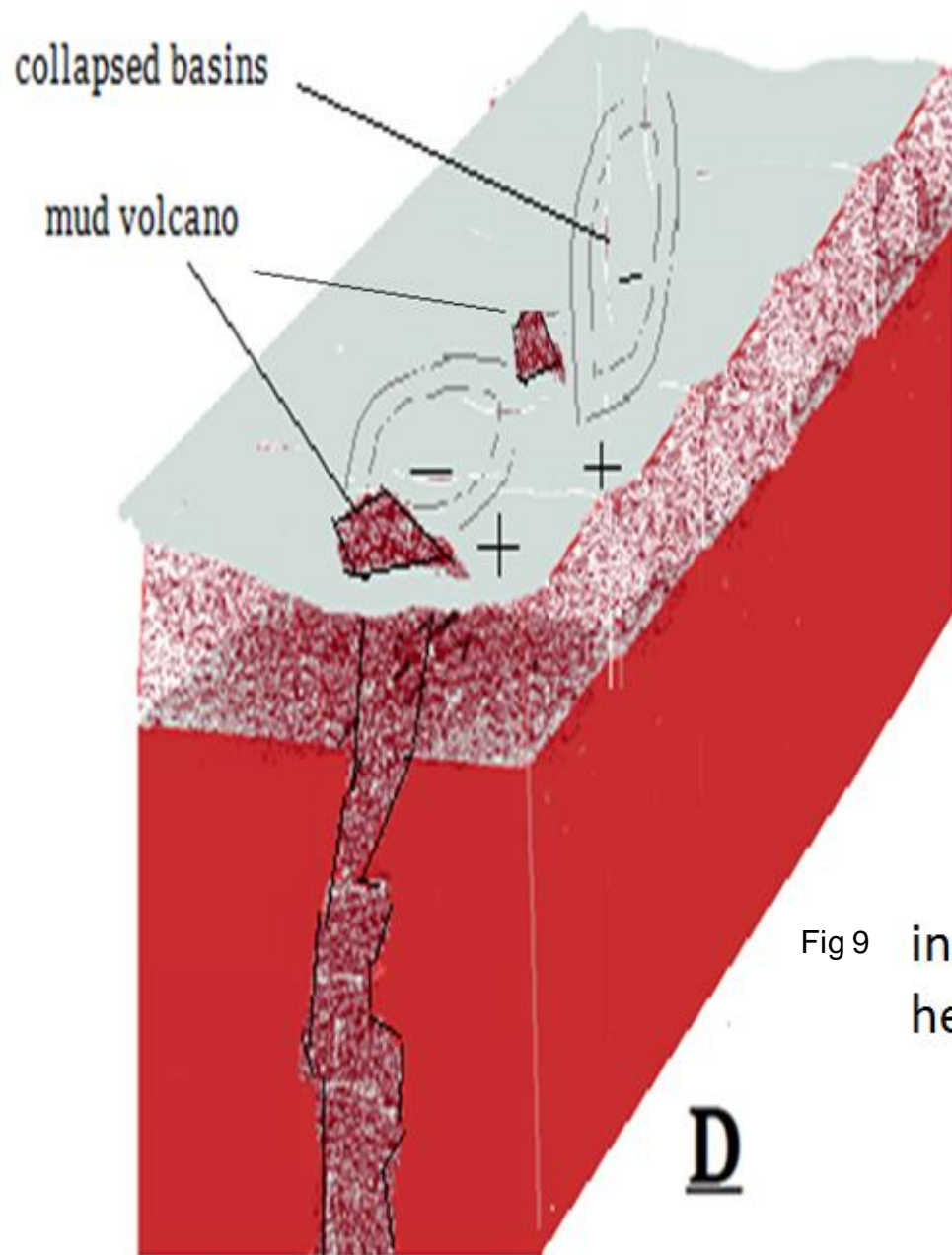
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stage F high pressure and water squeeze ; generation of mud volcano

Fig 8 vacuumed and squeezed sediments Stage C Sediment Vacuumed during tectonic activation (Non-gravitational movement)



section D negatif type sediment topography with outlets can be clue about past earthquakes.

Different far topographic collapse regimes as in linearity can give considerable idea about time and physical specications of broken fault segment

Fig 9 increasing and reducing outlet activities helps to understand basin deformation

Cause to what?

- Water or sediment mixed carbon compounds let to creep or silent earthquake (when they infiltrate to inner surface of faults)
- Sediment reservoirs can be spread as volumetric explosion to sedimentary basin during on next earthquake
- Tectonically or gravitationally recompressed gap can squeeze all vacuumed material in time under high pressure

(Surface material or current of underground open-end fluid systems can stop with same forces)

It can be a reason for lens type discontinuities in seismic data where taken around the fault.

- Captured cold slurry sediments under continuous or quick compress can create pockmarks and displacing pockmark strings.

(Strings can be occur as a response to continuous sediment deformation or physical material displacement cycle)

Fisherman nets : an example of quick squeeze phase

Geçici patlama açıklığı ? Erimiş ve siyah kütle takılmalı bölümler içeren balık ağıları

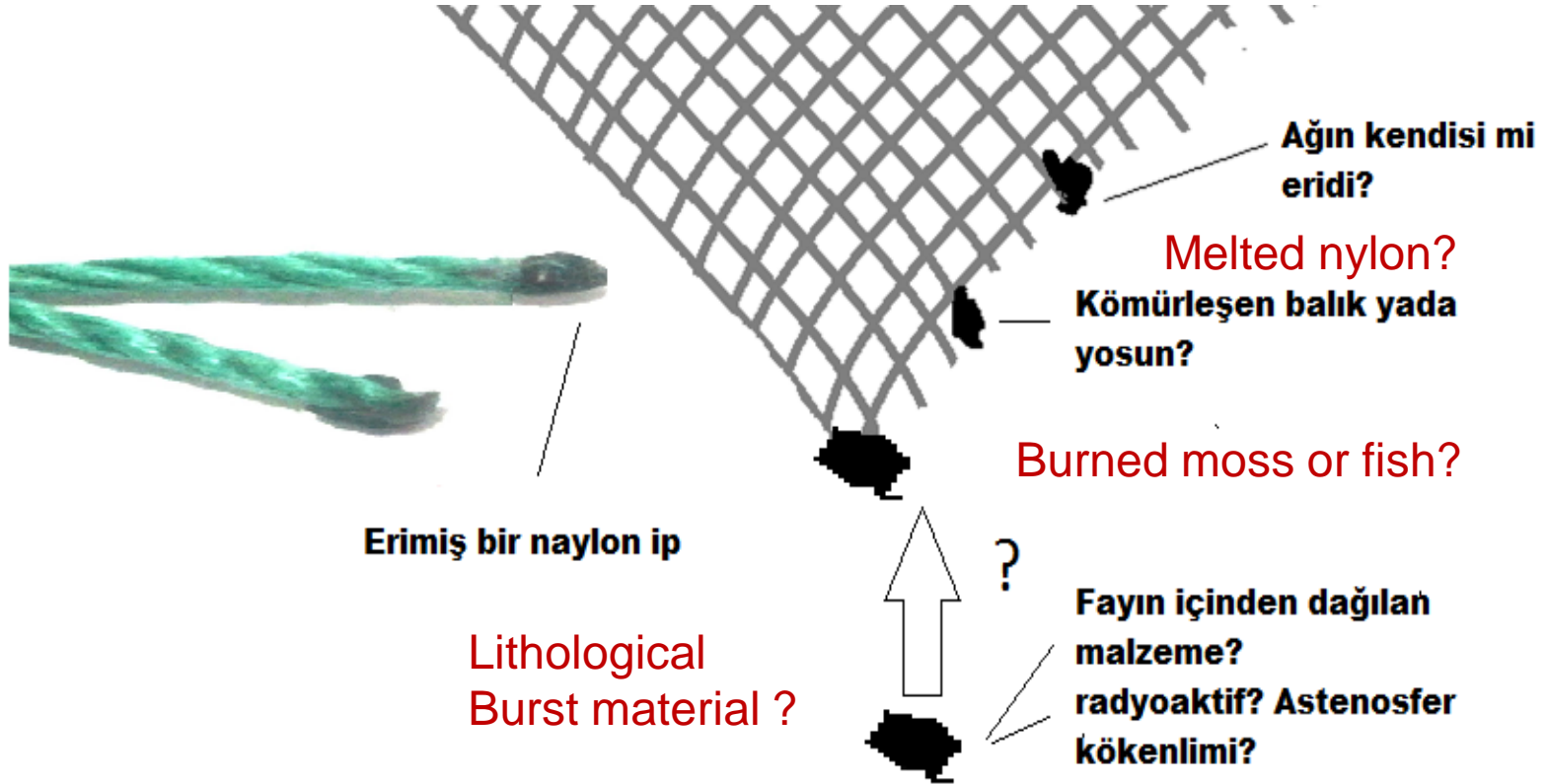


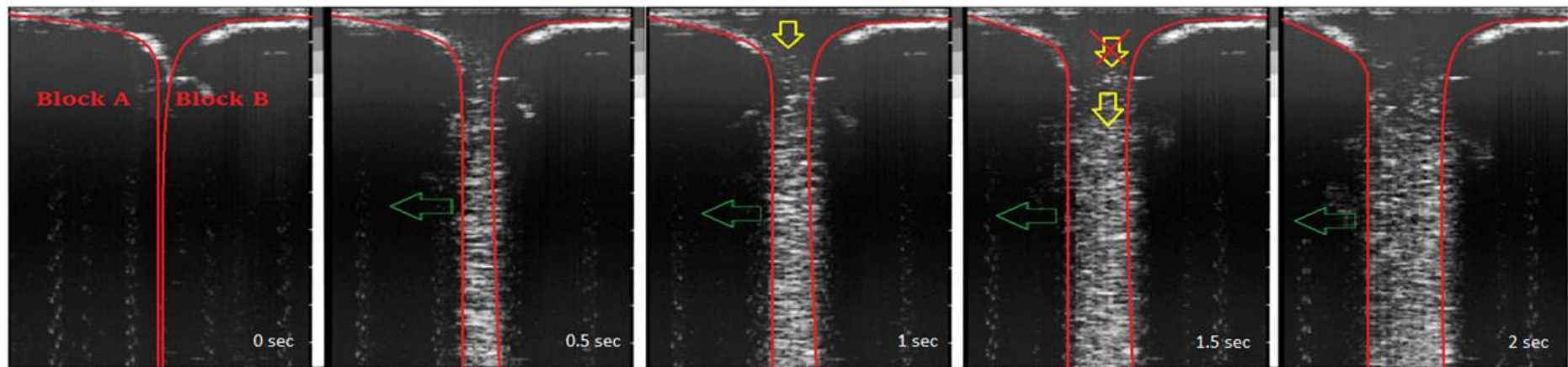
Fig 10 illustration for During the 1999 İzmit Earthquake ($M_s=7.4$), the fisherman nets over the main active fault (NAF) were melted. Natural occurrences must be archived during hazard for future works

Slow squeeze phase provides non-thermogenic originated cold sludge volcanoes or some types cold fluid escapes

Experiment

- Experiment setup for 'turbulent water current via vacuum action & soft sediment response on the temporary or permanent gaps of activated fault' were tested. Underwater vacuum conditions were created under the action of separating the adjacent blocks. Rupturing of the durable bottom layers of the sediments (or the bedrock) were equalized to separation of blocks, and plant-based hydrated colloidal particles were acted as the top sediments that could be pulled with the power of vacuum force.
- At the experiment, shallow water conditions were not modelled, because atmospheric air intake during sediment material suction make disturber effect on sonic tracing of particles about reduced p-wave conductivity.
(Oncoming air volume to low surface pressure area of water is artificially added to figures. If block separation velocity is increased to create that natural air wedge, observation of particles may not be possible. This is because they are more quick than reflection time of sound.)

NAF in marmara sea as an example of instantaneous sea floor separating for strike slip fault observations



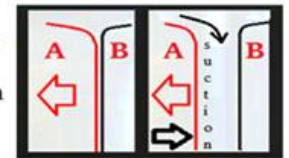
Moving block direction



Displacing same particle



Different particle at same morphology

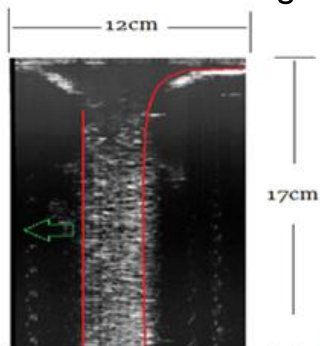


separating seafloor observations during 1999 Great Izmit earthquake proofing sediment and water suction and spread of bursted materials on fault line where it passing shallow basin of Izmit gulf

Records from (Ulusoy 2002)

interlaying unpermanant gaps

Fig 11 underwater sediment vacuum experiment



underwater vacuum experiment settings

sonographic picture dimension 12x17 cm wxh

X ve Y scale : 1*1

experiment aim : modelling of underwater vacuum conditions

how effecting turbulent water current with plant based hydrated colloidal particules

Plastic block with curved edges & filled clean water used because perpendicular shape creating air cavity. (Natural soft sediment block has curvy edges under water current)

Air gap and water elevation on top of high vacuum and ultrasonic tracing

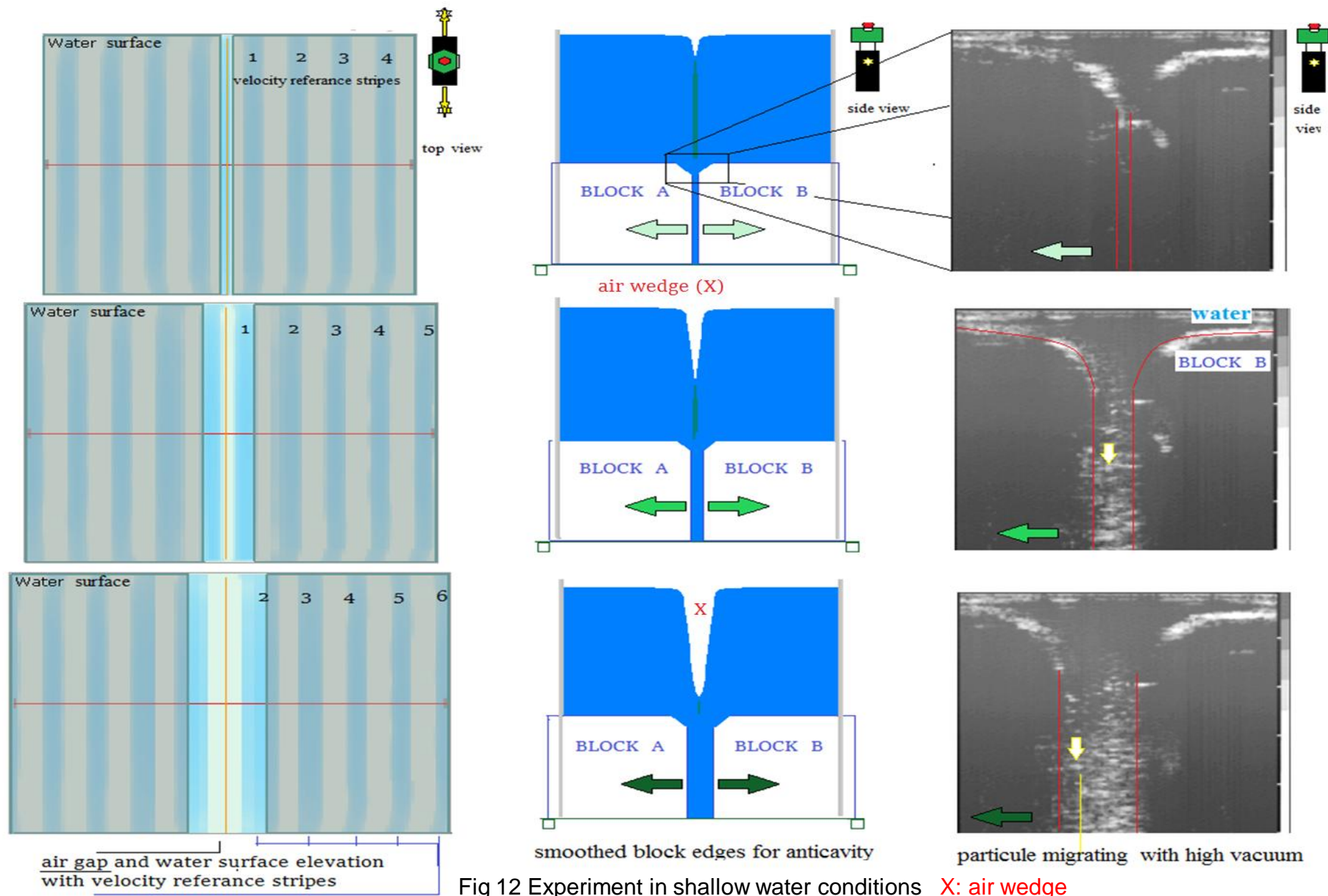


Fig 12 Experiment in shallow water conditions X: air wedge

x oncoming air volume to low surface pressure area of water is artificially added to experiment. Because block separation velocity if increased for create that natural air wedge then observing of particles not possible because they are more quick than reflection time of sound

Results

- Generation of some types of vertical material carrier occurrences from inside of sedimentary basin to seafloor surface which one not originated by plumes or direct magmatic rise, as a Derivatives of them can triggered by tectonically captured cold fluid and sediments. They can classified under root name of **cold sludge type**, especially being a close to tectonic fault systems. (mud volcanoes, fluid outlets, pockmarks, even cold seeps with tectonic fracture connection to gas hydrates) Their thermogenic versions also known well but hybrids of cold and thermogenic types can be a different research subject.
- Their changing activities or regeneration places can gives a clue about past or future tectonic events. For past tectonic activity we need to check where the topographic collapse detected. For future tectonic activities ; looking to where , rising or the material outlets occurring is the considerable idea. And when their activity abnormal than before we can consider that idea; about material strength value of fault segment is reached to its maximum before failure stress (earthquake).
(Reverse considerations always possible belong to crossing systems).

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Thank you for reading !

which is real problem? viruses, or human-induced pollution? evolving of virus for living effort in human pollution is natural.

Human made mean is nature is capable for made it.

