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18 MAY 2009

2009 Victorian Bushfires Royal Commission

Submissions cover sheet (for postal submissions)

Please download, print and complete this form, and enclose it with any *postal* submission you make to the 2009 Victorian Bushfires Royal Commission. (NB. Electronic submissions can be lodged directly at www.royalcommission.vic.gov.au and do not require this coversheet.)

Post your submission to: **Submissions, 2009 Victorian Bushfires Royal Commission, GPO Box 4358, Melbourne 3001**

General submissions close at 4.00pm, Monday 18 May 2009.

YOUR DETAILS	
Your title *(eg. Mr, Ms, Mrs, Dr etc..)*	Mr.
Your full name	Milan Mitic
Organisation represented by your submission (if applicable)	
Email address	[redacted]
Postal address	[redacted] Wooloowin 4030
Telephone	[redacted]

Main topics addressed by your submission *(please tick)*:

☑	Causes and circumstances of the bushfires
☑	Policy, preparation and planning of governments, emergency services
☐	Preparation and planning by communities and households
☑	Response to the bushfires
☑	Essential services, including water and power
☑	Other Climate Geo Engineering

Please list any towns or communities that are discussed in detail in your submission:

Climate regards All towns & Land more rain + cooler Climate

Please provide a general description of what materials you are providing as part of your submission *(eg. Letter; documents; DVD, photos etc... NB. No originals please)*

1. 1o Cad drawings + title
2. Version 3
3.

Please tick here if you request your submission to be treated as confidential: ☐

I acknowledge that:

- *My submission will be treated as a public document and may be published, quoted or summarised by the 2009 Victorian Bushfires Royal Commission.*
- *The Royal Commission will consider any requests for confidentiality. I will be contacted if any request I make is not granted and have the option to withdraw my submission.*
- *I can be contacted by the Royal Commission in relation to my submission.*

Signature [redacted] Date 15 May 2009

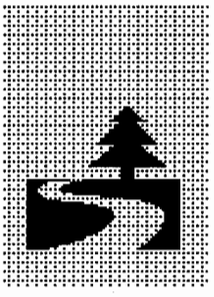
CLIMATE GEO ENGINEERING

CLIMATE MELIORATION
FOR AUSTRALIA
M I T I C

construction of
Environment similar to Amazonia on NW Australia
with

HUGE TIDES
HUGE EROSION
HUGE EVAPORATION
HUGE DESERTS
HUGE DESALINATION

To produce more rain across Australia.



more rain,
cooler climate,
less cyclones,
less floods,
less bush fires

ACROSS AUSTRALIA

Milan Mitic 8 May 2007

CLIMATE GEO ENGINEERING, FOR
AUSTRALIAN CLIMATE MELIORATION.
USING HUGE TIDES ON NORTH WEST AUSTRALIA
FOR CONSTRUCTION AND FUNCTION OF TIDAL RIVER SYSTEMS.

MAJOR ADVANTAGES:

1. Low construction and maintenance costs.

2. Tidal environment = huge carbon sink and more oxygen.

3. Better tidal environment than desert.

4. More rain downstream across Australia.

5. More clouds = cooler climate across Australia.

6. Desalination of country.

7. Transport using tidal channel.

8. Huge hydropower stations could be constructed in future along proposed tidal channel and elsewhere because of more rain.
Perhaps producing hydrogen for use in cars instead of petrol = less polution in our towns and reduction in global warming.

9. Tourism.

10. Life in tidal environment.

11. More food from existing and new field.

12. Less extreme temperatures = less storms.
(water in environment equalises temperature - no cyclones in South America).

13. There are many many benefits to many too mention.

14. Low construction costs - large part of tidal channel made with the use of huge tides - erosion.
It is no good to have heavy conventional construction machinery in channel because of compaction effect and also costs.

Water is very good compactor but once ground is loosened up water will cary material away.
erosion starts that way because material after first layer is removed is usually less compacted.

15. Best specially designed barges towing behind device to loosen ground to increase erosion specially at outgoing tide.
Such barge could travel long distances with tide flow in each direction using tidal power only.

Blasting and huge tides can also remove a lot of material - start and increase erosion.

Tidal environment similar to Amazon environment = plants and trees that can tolerate sea water salinity.
Tidal rivers, marshes, lakes and rainforest around.

More rain across Australia and many many other additional benefits should be considered in regard to proposed tidal channel and tidal environment.

Wind turbines, solar panels, desalination plants
can not compete with nature. -
12m tides energy and 4m of evaporation per year.
Once tidal channel is done nature will take its course.
With human help establishement of tidal
environment can be accelerated and with it green
country, pastures and fields elsewhere.

CONSTRUCTION OF TIDAL ENVIRONMENT
WITH HELP OF HUGE TIDES ON NORTH WEST AUSTRALIA
TO PRODUCE RAIN DOWNSTREAM ACROSS AUSTRALIA.

On north west Australia we have:

The largest sea shelf.
The hottest sea pool of water.
The hottest land area.
Third highest tides on earth.
4000 mm of evaporation per year if there is water.
Huge desert areas the size of many countries.

Huge desert areas produce wery little evaporation.
since no water to evaporate.

Proposal is to change desert area to
tidal environment area similar to Amazon country.
Amazonia has tidal river system
Sea water tolerating plants + rain forest on higher ground
with huge evaporation + transpiration

All rain on land comes from initial sea water evaporation
+ initial tidal environment evapotranspiration. Because
evapotranspiration from fallen rain, same initial water
can rain few times on continent, before it rains back to sea.

Prevailing winds blow from west to east and south
across Australia and evaporation from our tidal
environment area will move a long way across Australia
and more chance for rain:

16. Long distance from north west to east or south.

17. Additional evaporation works similar to cloud
seeding.

18. Additional moisture from tidal evaporation will
produce more clouds.
= more shade to earth
= less evaporation.
= more water in the soil
= more water in dams rivers and lakes.
= more rain.
= fallen rain will produce additional
evaporation and rain.

19. Tidal environment area = life
Where is water there is life.
Better to have tidal environment than desert.

20. Proposal is to construct erosion trigger channel
on north west Australia and help nature to establish
tidal environment. Long ago there were huge
rivers and lakes on north west Australia and
at that time Australia had plenty of rain big rivers

and lakes.

21. Huge 12m tides have huge erosion potential and will be big help for construction of tidal channel.

22. Huge 12m tide, water will reach far inland and produce high evaporation and rain few times from initial tidal environment evaporation.

23. Huge tides are necessary for good working of tidal environment.
Tides will bring into land nourishment for plants, sea water for tidal plants (mangroves etc.) and oxygen for life.

24. Tides will gradualy desalinate our hyper saline salt lakes and country (desert) and bring life into lakes and country and more rain across country.

There may be many alternating layers-seams deposits of salt - silt- clay in salt lakes.

25. Removal of obstructions, making river deeper, wider and longer will increase river speed.

26. Deposit at mouth of a river (river delta) may be formed at beginnig of works. Delta reduces speed of entire river but once tidal river gets bigger speed will increase and delta removed.

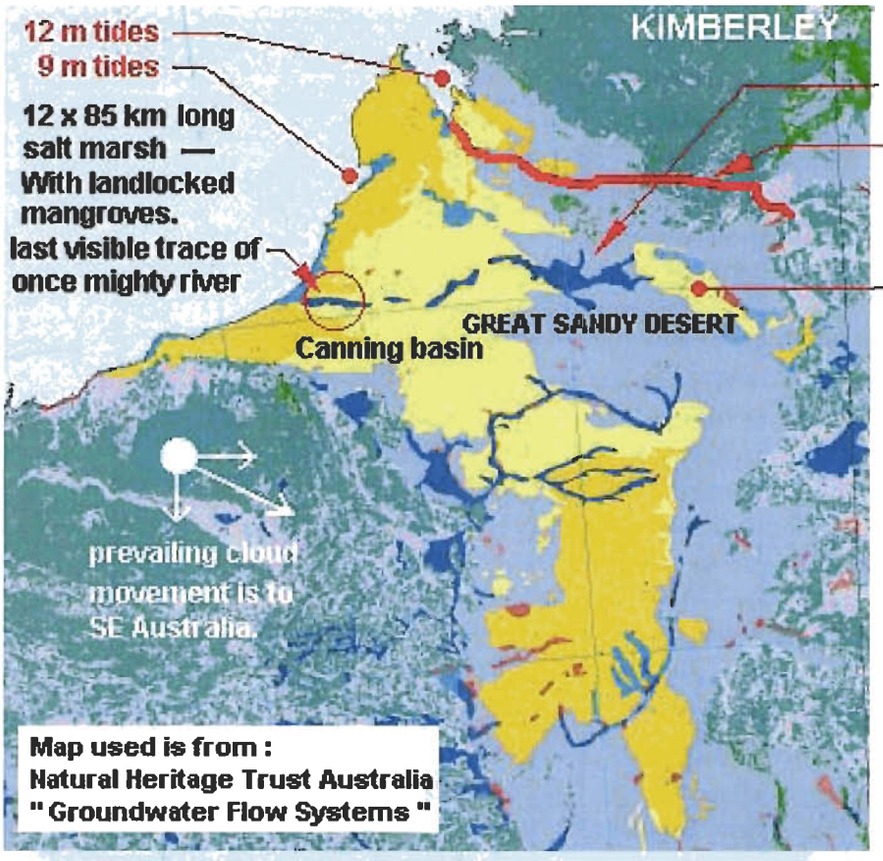
27. Existing or restored ancient rivers could help establish, tidal erosion trigger channel and tidal environment and reduce costs of construction.

28. Deserts are full of sand and salt.
Sand deposits can be huge. (eg. Stradbroke island)
" Ergs " = vast regions covered deeply with sand.
Salt or sand is easy to remove with erosion.

In short it is hard to evaluate potential what tidal erosion trigger channel and an established tidal area environment on north west of Australia will do and its benefits for Australia and construction costs.

I like that many scientist and enginneers and construction companies get envolved with their ideas and knowledge to improve proposal what would benefit to better understanding of proposal.

Milan Mitic (C) 3 July 2007



200 km long buried lake (huge)
lake got outlet to sea so area was green
with lots of rain. River is also buried.

Fitzroy river is tidal and can
be useful to reduce construction
costs of tidal channels or
used in proposed tidal river system.

High salinity aquifer 7000 ml / litre
(sea water 3500 ml / litre)

Canning basin is huge aquifer, 519 873 km2
less saline than sea water. 1800 ml / litre

Not good for farming because
of huge evaporation rate. (4m / year)

mainly sandstone kilometers thick
with sand dunes above (possible ergs).
and some huge deposits of salt.

65% of area — 10 m to top of aquifer

Ancient and existing rivers – lakes
could be used in construction
of proposed tidal channels.

Some salt pans and rivers are totaly buried ,
others are partly buried.
Ancient lake was larger and deeper than
today salt pan.

Indicates ancient river or lake

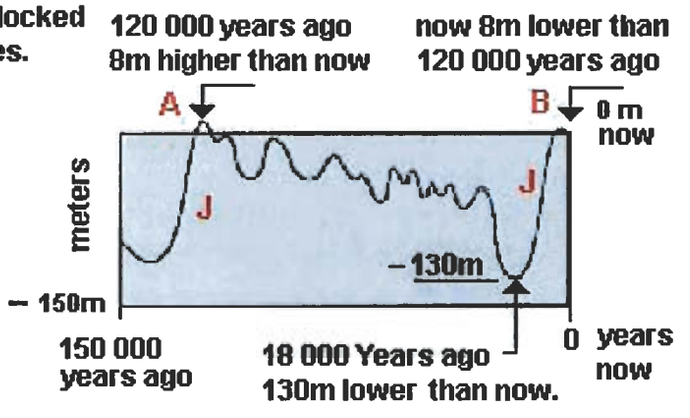
System of ancient rivers , lakes was working 120 000 years ago
Because of low ground and extremely high (12m tides) system of rivers was tidal - (sea water + rain)
Because of extremely high temperature tidal area produced enormous evaporation 4m per year
Area was probably lush green - similar to Kimberley that is tidal.
Than sea level dropped and tidal action stopped .. ancient rivers and lakes and tidal
environment dried out .... no more enormous 4m evaporation ... and many places in Australia
changed to deserts ..

Once tidal environment works :
Because of larger cloud cover continent wil be cooler and winds will blow
more from sea to Australia than now. Larger cloud cover = less evapo.

ANCIENT SEA LEVEL:
120 000 years ago was 8 m higher than now.
18 000 years ago was 130 m lower than now
now is 8m lower than was 120 000 years ago

With landlocked
mangroves.

In Kimberley rivers are enormous boulders 5m length
that are rounded and were carried by water
that water must have power. - erosion is necessary
for economic construction and function of tidal channels.
to construct tidal environment with tidal trees etc.

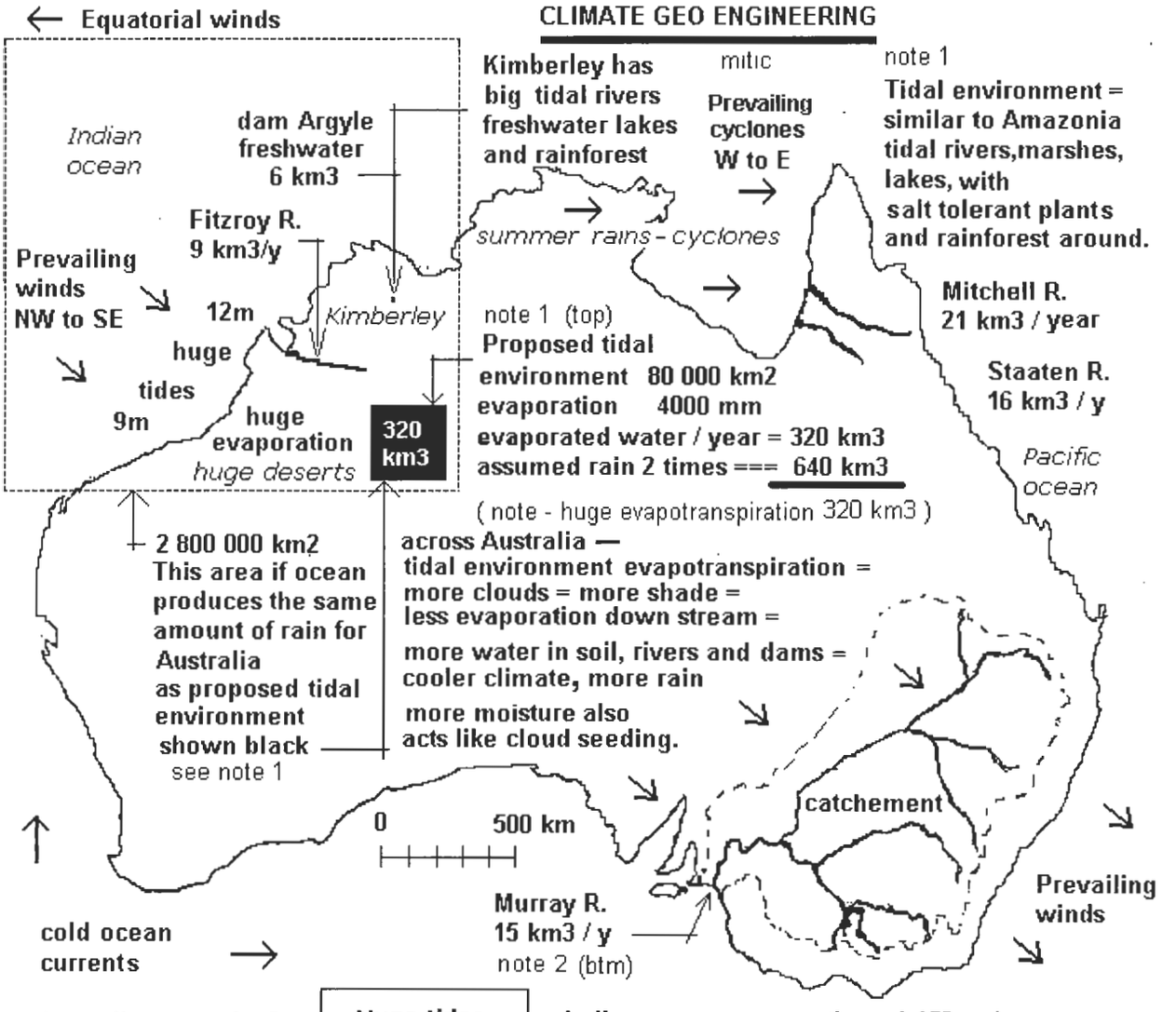


SEA LEVEL VARIATIONS IN 150 000 YEARS

MILAN MITIC
4 MAY 2007

J curve repeats. Sea level
in the past was similar level
as at A many times before.
one can expect B to be similar

CLIMATE GEO ENGINEERING



Australia ··3600 km3
north 2/3 ··2400 km3
south 1/3 ··1200 km3
Avg. rain per year for Australia (3596km3)

Huge tides
= huge erosion
+ blasting
= economical excavation

Indian ocean evaporation 1.150 m / year
90% rain back to sea
10% rain to land = 0.115 m
2 800 000 km2 x 0.000115 km === 322 km3 / year

Proposed tidal environment
evapotranspiration 4 m / year
80 000 km2 x 0.004 km ======== 320 km3 / year

COMPARISON

Aral sea Irak marshes	irrigation 80 000 km2 ·· main channel 1300 km long. draining 40 000 km2
NW Australian desert	Proposed tidal environment 80 000 km2 ·· main channel 1000 km long Excavation assisted by erosion with huge 12m tides. Huge evapotranspiration from tidal environment 4 m/year

initial evaporation for southern Australia rain	→	rain twice (note 3)	+	more vapor acts similar to cloud seeding and long way across Australia	=	more rain
Indian ocean 600 km3	=	1200 km3	+	seeding	=	more rain
tidal environment 320 km3	=	640 km3	+	seeding	=	more rain

note 3 Rain twice = rain from initial evaporation + rain from evapotranspiration of an earlier rain.
In Amazonia sometimes evaporated water rains back to the same groud from where was evaporated.

note 2 Murray river in big drought stops flowing ...
Thinking is that :
One km3 more water might save Murray R. ?

Evaporation areas are shown for size comparison only - and not for location or shape.
see note 1

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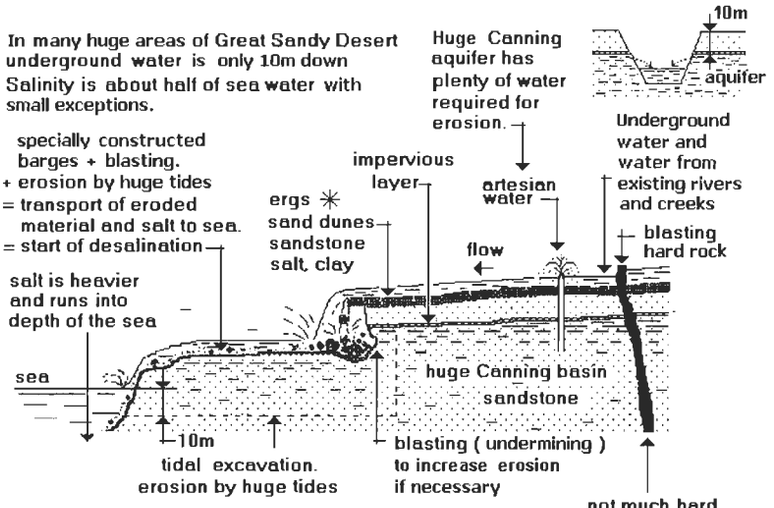
SIMILAR TIDAL ENVIRONMENT SYSTEM COULD BE APPLIED ELSEWHERE.



If river is deeper than level of underground water than underground water will run into river and river will have running water also in drought or low tide.

Deep river will desalinates the country
River - erosion will undercut banks (+ blasting) and rain, floods, will transport sand and salt into river and river further to sea.
No more " white death " - salt

At present eroded material and salt is accumulating in salt marshes, salt lakes, and underground water.
= salinity is increasing = " white death " = desert is increasing.

Huge amount of accumulated material and salt can be removed by erosion from salt marshes, salt lakes, and underground water. to desalinate country.

Great Sandy Desert is at times in flood after cyclone.
Rain water that at present rapidly runs into salt lakes will run into sea. Rain water floats on top sea water and evaporates more = more rain clouds from sea.

Saline water evaporates less than freshwater.

✳ ERGS = vast regions covered deeply with sand.
(+ sand dunes above)

EROSION AT THE BEGINNING OF WORKS

to prepare channel for huge tidal erosion.
or increasing river depth at higher ground altitudes.

Test should be done to get best method
for erosion assisted excavation.

Engineers can evaluate costs for erosion assisted excavation.
And time necessary to construct erosion trigger channel ...
(Pilot channel testing facility)

With increasing size and depth of channel ...
natural erosion will be reducing construction cost of
tidal river, tidal tributaries, creeks, swamps and salt lakes.

With time nature will establish environment suported by tidal sea water desalination of higher ground will establish rain forest and increase rain.

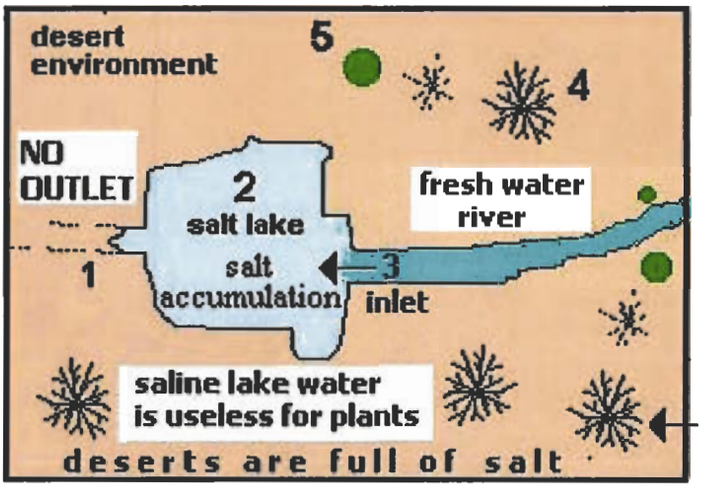
With human help tidal system of river, tributaries, creeks, seawater lakes and rain forest on higher desalinated ground can be eccelerated.

extremely high tides + extreme desert heat + huge deserts areas
+ human know how

Tides will remove accumulated salt from hyper saline lakes
and change now hyper saline salt lake to sea water salinity lake,
tidal + rain erosion + human help can make lake deeper
what will desalinate huge area of land around lake
on desalinated ground evergreen rainforest can be established
what will increase air humidity - (evaporation + transpiration)
for more clouds and rain downstream across Australia.

>>>>> DEVELOPMENT OF DESERTS <<<<<

DESERTS ARE FULL OF SALT



1 LAKE HAS NO OUTLET
2. SALINE LAKE
3. INLET RIVER
4. DESERT TREES
5. DESERT PLANTS

EVERY RIVER HAS A LITTLE SALT NOT ENOUGH TO BE CLASSIFIED SALTY BUT WITH YEARS- RIVER SALT GETS ACCUMULATED IN LAKE = SALINE LAKE.

Desert trees have evolved not to loose water
Desert trees must conserve water to survive.

= reduced evaporation
= less clouds
= less cloud shade
= hotter weather
= less rain
= hotter climate

VERY HOT AND VERY DRY DESERT AIR RISING
EXISTING CLOUDS DISAPPEAR (evaporate)

see note 1
saline lake water when flood spils over and kills trees

trees work like pump to take underground water and with transpiration that rises into atmosphere produce clouds and rain.

Since there is no trees, only hot dry air (without transpiration) **raises and makes atmospheric air hotter -**

hotter air can hold more moisture before rain point is reached
= less chance for rain.

Farmes near big saline lake say " it rains once in a blue moon" some time no rains for years ....

note 1
Huge areas of Australia get flooded and deserts in north west Australia also.
(similar to Amazon)

Floods can be also used to increase erosion.

saline lake deprives country of rain.
saline lake spreads underground saline water far around
wind and floods spread salt above ground.

When rain or river water enters saline lake, water salinity increases - hyper saline water can not support plants and trees.

Salt kills trees so no evaporation ...no clouds ... no rain = desert.

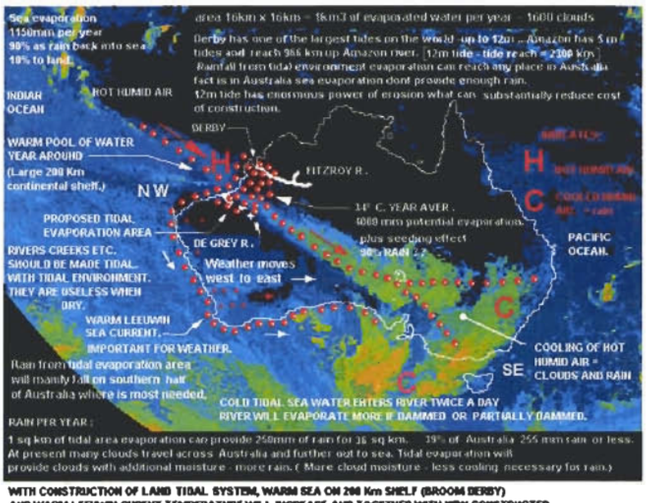
High salt content is good preservative does not suport life.
Organic matter has to be decomposed for plants to use it, salt prevents decomposition.
Desert soil is not fertile enough to sustain life of many plants and animals.

Lack of water does the same no life :

Primary desert up stream = lack of rain down stream
= secondary salination = secondary desert down stream.

(Murray river and other rivers) ?

>>>>> DESERTS ARE INCREASING <<<<<



WITH CONSTRUCTION OF LAND TIDAL SYSTEM, WARM SEA ON 200 Km SHELF (BROOME DERBY) AND WARM LEEUWIN CURENT TEMPERATURE WILL INCREASE AND TOGETHER WITH NEW CONSTRUCTED TIDAL ENVIRONMENT WILL PROVIDE MORE MOISTURE TO CLOUDS --- AND RAIN ACROSS AUSTRALIA.

Lake Eyre if connected to tidal system can provide 19 km3 of evaporated water.
When area around lake Eyre is desalinated than this total area -lake and land around it tidal and non tidal area can provide 2600 km3 of evaporated water.

120 000 years ago when sea levels were 6m higher than now, area on NW Australia got big tidal rivers and environment was tidal similar to Amazon with tidal and non tidal areas with plenty of rain trees and vegetation with huge evaporation.

Australia got rain from evaporation on north west Australia. Area of lake Eyre was two times and half larger than now and depth of lake was 27m.

Water in lakes and rivers across Australia is from sea, and tidal areas evaporation = clouds = rain

Tidal river can be very long and tidal environment far from sea and huge.

Cold sea - warm coastal waters - very warm tidal rivers.

Tidal evaporation is huge 4m/year and rain from it has more chance to fall on land .

tidal environment area 256 km2 (16 km x 16 km) (indicative only)
construction cost = 38 million ?
price per m3 of water = 37 cents (if rain from initial evaporation only once)
(this is one cost only ... system will look after itself ...nature will take over once established)
If rain 4 times from initial evaporation (90% of rainfall evaporates again) then
price 9 cents per m3

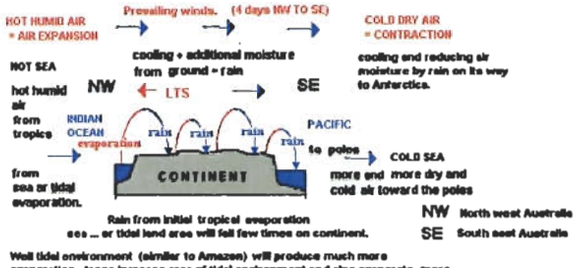
There will be at least 25 % of seeding effect = additional moisture to clouds from sea that would not produce rain otherwise ..... price = 7 cents per m3 .....

Price for cubic meter of water of water is calculated only for first year in operation ..
Once tidal evaporation environment is established nature will take over and rain will be free - no cost.

evaporation 256 km2 x 0.004 = 1km3 of evaporated water. (evaporation 4m/year)
1km3 = 1 666 666 cumulous clouds. (sheds cooler climate)
1km3 = 833 big storm clouds per year.

Number of clouds can be kreased -- evaporation from fallen rain and cloud travel 4 days across Australia.
Area of evaporation - can be gradualy increased and with it number of clouds and rain.

One could imagine 4 m high sea in Australian north west deserts and all that water evaporates and travels across Australia .
Fact is on north west Australia evaporation is 4m per year.
Fact is the smaller the volume of water the quicker and hotter it gets. (Typical Red sea or coastal water is warmer than ocean)
Fact trees increase evaporation and there so after rain since area of evaporation is big.
Rain forest makes rain or Amazon has its own climate ... tidal.



Well tidal environment (similar to Amazon) will produce much more evaporation - trees increase area of tidal environment and also evaporate more more specialy after rain .. when leaves are wet .. and area of evaporation increased.

All initial rain comes from sea and not enough for Australia ... exeption is Kimberley

well Kimberley has far the largest rivers and lakes in Australia and plenty of rain.

Kimberley is just north of our proposed tidal environment and Kimberley has tidal environment.

Area south of Kimberley is flat and got once huge tidal environment but rivers for some reason silted up and system stopped functioning ... but Kimberley is mountainous so rivers got good fall and silting did not occur.
Why silting of rivers happen ... perhaps sea level fall so much that tide could not enter tidal river.

Amazon is flat also but no silting .... so it could be some natural catastrophe like earthquake that made large gelogical fault, that stopped tidal river flow. meteorite or asteroid or volcanic magma or volcanic ash. Adjacent area south of proposed tidal area was once volcanic with a lot of magma - basalt today.

area is prone to earthquakes

LTS indicates wind that blows from land to sea it happens when land air is hotter then sea air. (hot air expands cold air contracts).

Typical land to sea winds blow in a heat of the day and lees in night time
LTS winds blow more in summer and lees in winter.
LTS winds prevent initial sea evaporation to enter continent at times and reduce rainfal on continent.

since all initial evaporation necessary for rain downe stream comes from sea (or tidal environment evaporation its much better that winds blow from sea to land ,

LTS wind take what little moisture there is away from continent to sea and if sea air is colder then very possibly rain into sea and once there is rain winds from land to sea will increase since rain cools lower layers of air .. cooling of air = contraction = wind.

With establishment of tidal environment land area will become cooler ... because of evaporation and clouds above. And there will be less wind from land to sea and more from sea to land ....
Since clouds from north west of continent have long way to travel across Australia continent will be cooler and also more sea winds to land will bring more rain.

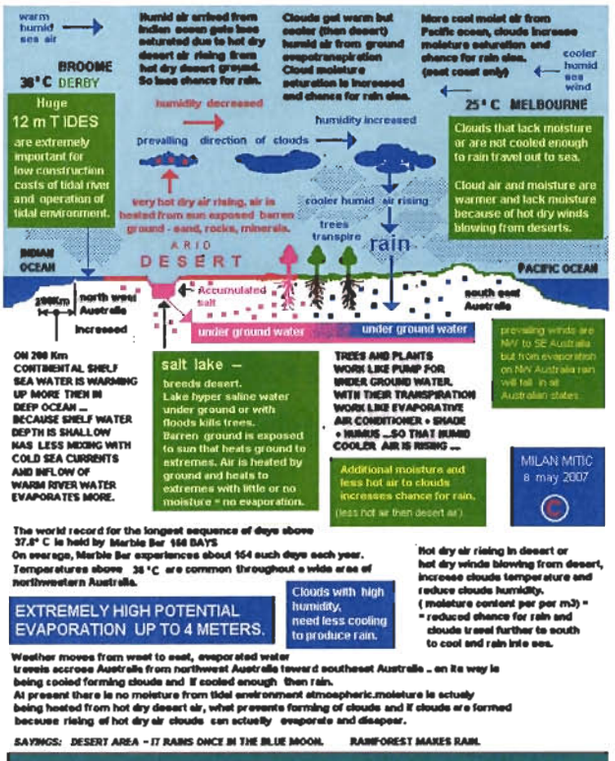
Rain water is cooler than saline water (sea water). Rain water floats on top of more saline water. Rain water evaporates more - longer than saline water. Evaporation increases salt content of saline water at surface. More saline water gets heavier. Heavier water falls down

When surface saline water falls in the most warm and takes warms into depth of sea colder but less saline cooler water takes its place at surface. Colder water needs time to warm up and evaporate but process repeats water evaporates gets saltier,heavier and falss again. = less evaporation in saline water than rain water.

When we get our tidal system working there will be more rain = less salinity in rivers ... discharge of river water into sea ... will reduce salinity of sea at surface.. what will increase evaporation.
Also more rain because of tidal environment and some rain may fall directly into sea.
Enclosed water evaporates much more .. because of non mixing with deep cold water.
Shallow water body warms more, quicker and evaporates more. Less saline water evaporates more. Less saline river water makes sea evaporate more.

MILAN MITIC
4 MAY 2007

EROSION AND TIME Let assume that on north west Australia with the help of erosion channel is excevated. so deep that huge 12m tides can flow in and out of channel twice a day
Ground chosen is low and easy for erosion (sand or similar).
We will need very little transport of material since erosion can do that more efficient and cheaper but blasting will be necessary here and there.
How wide and deep will channel be in years ....



cost of tidal channels construction will be very low .

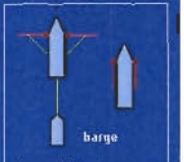
1. LOTS OF AREAS ARE UNINHABITED OR 0 TO 1 INHABITANTS PER Km2
AREA HAS VERY FEW ROADS SO FEW BRIDGES WILL BE NECESSARY
ONCE CONSTRUCTED TRANSPORT BY BOAT, BARGE, SHIP WILL BE USED
2. USE OF TIDAL POWER + EROSION WILL REDUCE COSTS OF EXCAVATION

CONSTRUCTION OF TIDAL ENVIRONMENT (like Amazon)
FOR WEATHER MODIFICATION.

USING HUGE TIDES ON NW AUSTRALIA
FOR CONSTRUCTION AND FUNCTION OF TIDAL CHANNELS.

MAJOR POINTS.

1. very low construction and maintenance costs.
2. huge carbon sink and more oxygen.
3. better tidal environment than desert.
4. more rain downstream
5. cooler climate
6. desalination of country
7. transport using tidal channel
8. tourism
9. life in tidal environment
10. less extreme temperatures - less storms. (water in environment equalises temperature).
11. there are many many benefits to many too mention.
12. **why low construction costs ?**



force of 12m tides is huge

just to show and example much better solutions could be designed and constructed

large part of tidal channel construction could be done with the use of huge tides

It is no good to have heavy conventional construction machinery in channel because of compaction effect and also costs.

Water is very good compactor but once ground is loosen up water will carry material away. erosion starts that way because material after first layer is removed could be loose.

tidal environment = similar to Amazon environment with tidal vegetation mangroves and rain forest.

Best specially designed barges towing behind gadget (with spikes or similar) to loosen ground for easier erosion specially at outgoing tide such barge could travel long distances with tide flow in each direction using tidal power only.

Blasting and huge tides can also remove a lot of material if necessary.

First small channel to be excavated .. so big that small barges can work and increase width and depth of channel.
Once channel size is increased sufficiently, larger more poverfull barges can enter and start working
Barges to be specially designed for purpose to rip, tear, break, scrape,scour, to increase erosion and size of channel.
Barges should use power of tides.
Petrol, diesel and conventional earthwork machinery should be avoided and used only where absolutely necessary.

Establish an outlet to sea for existing salt lakes so that hyper salinity is gradually replaced with sea water tidal vegetation and life.

Eventually saline lake should have flow in and out either tidal or tidal+rain so that erosion can increase size of lake.

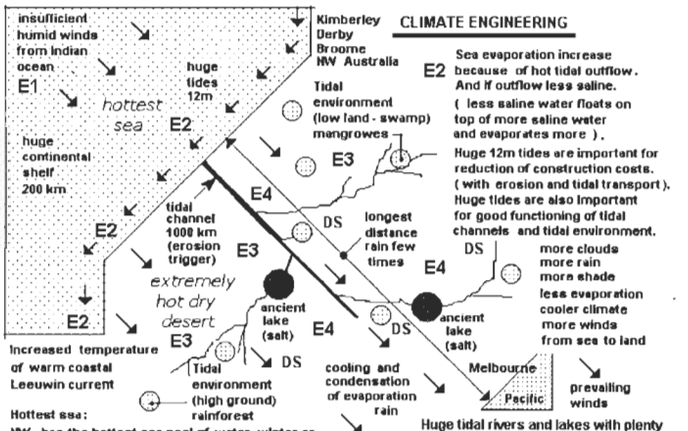
Looks that today salt pans and buried lakes and rivers were once part of huge tidal river system .

Buried lake is about 50 km wide and 200 km long . (see drawing ancient rivers)

There is one of the largest continental shelf on NW Australia. Water heats more on shallow shelf than in deep ocean.
Sea current from north running along coast bring more warm water so area has year around the hottest sea pool of water.
Therefor incoming tidal water will be warm already and outrunning tide will increase temperature of sea water.
If out running tidal water has lower salt content than sea water it will flow on top of heavier saline sea water and evaporate more.

Salinity decreases evaporation in deep water.

MILAN MITIC
9 may 2007



CLIMATE ENGINEERING

E2 Sea evaporation increase because of hot tidal outflow. And if outflow less saline. (less saline water floats on top of more saline water and evaporates more).

Huge 12m tides are important for reduction of construction costs. (with erosion and tidal transport). Huge tides are also important for good functioning of tidal channels and tidal environment.

Hottest sea:
NW has the hottest sea pool of water winter or summer. Warm water will enter tidal channels and even warmer will discharge into sea. Important for sea and tidal environment evaporation on NW and evaporation from Leeuwin current .

Huge tidal rivers and lakes with plenty of life in water and tidal environment around, were long ago on NW Australia. And Australia got much more rain from evaporation on NW Australia.

E3 huge evaporation 4 m per year

DS desalination (hyper) (removal of salt).

E1 sea evaporation insufficient.

E4 evapotranspiration from fallen rain

tidal environment. (mangroves etc. + rainforest)

Speed of tidal current :

erosion starts above speed:

fine sand ..	0.15	- 0.30	m/sec
sand	0.40	- 0.90	m/sec
clay	0.70	- 1.20	m/sec

above speed of water ... 1.4 m /sec = erosion
below speed of ..... 0.5 m /sec = deposition

Observation shows that for inlets on sand coasts "maximum tidal current speed" at the highest tides (spring tides) must exceed about 1 m/sec to prevent deposition of silt at inlet.

Tidal current on NW Australia up to 8 m/sec what means huge erosion and long tidal reach.

Watergate if closed at high tide so it prevents flow of water to sea and then opened at low tide would increase speed of current and with it erosion.
And will be dangerous all along channel.
(average tsunamy is 13m high wave)

Tidal current speed depends on

Height of tide our second highest on earth 12m. The bigger the depth and width of of channel the higher the speed of water current and the longer reach into land. And high erosion.
Speed and tidal reach into land depend on mass and speed of water entering channel.

Amazon river :

tides reach 966 km upstream.
tidal bore reach is 800 km upstream
tidal bore starts on shallows 160 km upstream
tidal bore speed is 10 to 25 km per hour (2.77 - 7m /sec)
tidal bore hoight is 1.5 to 4 m
tidal bore occur if depth of river is less than 7m
Amazon does not have delta erosion continues and huge volume of silt is carried to sea.
Atlantic has fresh top layer uf water for kms from Amazon discharge.
Amazon has tides 5m to 6m max.
what is considered very large tide.

Speed of tidal current will be increasing with increasing depth and width of tidal channel.
And with speed of tidal current also increased erosion and size of tidal channel.

Tides on NW Australia are huge 12 m
Evaporation on NW is huge 4 m / year

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River Thames has tidal reach inland 104 km.
Hawkesbury River
flood stream = incoming tide 3 knots = 1.5 m/sec

CLIMATE ENGINEERING

for long tidal reach inland we need
1. big tide
2. big volume of water entering tidal channel.
3. big tidal channel
3. topography with little obstructions to water current. (small friction, no narrow or shallow location).

water speed required for transport of loose material rocks etc. coastal erosion

6 mm	at	0.5 m/sec
26 mm	at	1.0 m/sec
48 mm	at	1.5 m/sec
70 mm	at	2.0 m/sec
94 mm	at	2.5 m/sec
118 mm	at	3.0 m/sec
142 mm	at	3.5 m/sec
164 mm	at	4.0 m/sec
188 mm	at	4.5 m/sec
214 mm	at	5.0 m/sec
240 mm	at	5.5 m/sec
266 mm	at	6.0 m/sec
292 mm	at	6.5 m/sec
318 mm	at	7.0 m/sec

MINIMUM WATER SPEED REQUIRED TO START (TRIGGER) EROSION

Water speeds m/sec given are for erosion of undisturbed ground if ground was moved or blasting etc. speed of water can be reduced.

Erosion starts in channel at speed of water m/sec

Fine sand or silt, non-colloidal	0.45	to	0.76 m/sec
Coarse sand or sandy loam ,non-colloidal	0.53	to	0.76 m/sec
Silty or sandy loam	0.60	to	0.90 m/sec
Clayey loam or sandy clay	0.70	to	1.07 m/sec
Fine gravel	0.76	to	1.52 m/sec
Colloidal clay or non colloidal gravelly loam	0.90	to	1.52 m/sec
Colloidal, well- graded gravel	1.20	to	1.82 m/sec
Pebbles, broken stone,shales or hard subsoil or clay	1.50	to	2.00 m/sec

NW Australia
channel will have speeds of water above 4 m/sec = large erosion.

Very possibly more than 7m/sec. What will produce very high erosion.

Deserts are full of sand, salt deposits, salt crust -- material easy to erode.

Power of strong tidal water current can be used by barges - constructed to increase erosion. Closing and opening water gates will also increase erosion rate.

huge tides
+ rains, floods
+ sea storm surges
+ manupulation with water gates
+ blasting
+ engineering know how
= huge erosion by tidal waters in trigger channel

12 m tides

Tide height and water current speed are related.
It is the third highest tide on earth 12m we can expect also high speeds of tidal currents and extremely high erosion rate.

sequence of work

Stage 1
Small channel is excavated on low land, that is easy for excavation and erosion.
10m to underground water. 12m deep channel would have 2m deep water deep enough for barges to start operating.
Channel is excavated inland as far as possible and so deep that tides can come in and start erosion. (erosion trigger channel)

+ Canning aquifer, water 10m or less underground. (65% area)

Stage 2
Widening and deepening of tidal channel with erosion + engineering know – how.
(Specialy designed barges and machinery to increase erosion.
Blasting at the height of tidal water speed running out two times a day would remove massive volume of material).

Stage 3
Helping nature to establish tidal environment - mangroves (tidal region plants).
Erosion continues without human help.

Desert has changed to tidal environment, that need little maintenance
Trees are growing and area of tidal environment is gradualy increasing.
(it is huge carbon sink and produces huge evaporation for rain down stream).

many benefits

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>>> WHERE IS WATER THERE IS LIFE <<<

AMAZON RIVER

SEE POROROKA PHENOMENOM, (YOU TUBE)
TIDAL BORE, EROSION etc, ON INTERNET.

Tidal bore 3.7 m high of the Amazon travels 800 km upstream.

Tides reach 966 km inland of Amazonia.
Amazon tides are 5m high.
Amazon does not have a delta

ON AUSTRALIAN NORTH WEST ARE HUGE TIDES

UP TO **12 meters**

= **HUGE EROSION POWER**
= **ECONOMICAL EROSION ASSISTED EXCAVATION**
= **EXCELLENT FUNCTION OF FUTURE AUSTRALIAN TIDAL RIVER**

AMAZON WAS ONCE DESERT

Amazon river erodes and transport huge amount of material to Atlantic ocean, and also deserts sands from time when Amazonia was desert.

Amazon river beginning started long ago with small creek ....
today is mighty Amazon river
all done with erosion and Amazon river is still increasing its size.
with erosion helped by 5m Amazon tides.

If Amazon tides would be small and not 5m than river would run slow and instead erosion ....
slow river deposits material where river run is slowest ...
And eventualy river flow is blocked = salination = desert

Amazon river flow was once in opposite direction discharge was into Pacific Ocean.

Amazonia was desert in epoch when there was insufficient discharge of water + salt into ocean and salt accumulated on land

before present tidal desalination Amazon river system evolved.

Amazon river is sometimes called Sea River, well it is tidal and tidal water is salty
Map of the world shows that continental sea coast is greener and deserts are more inland of continents.
Tidal river works similar to coast improves - meliorates climate and environment around.

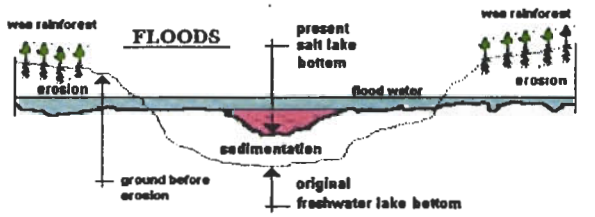
IF LAKE HAS NO OUTLET

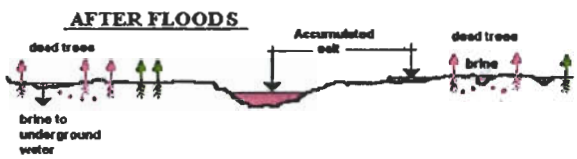
At the beginning lake was deep and got fresh water
but year after year river transported silt and salt into lake

Lake become saltier and saltier
and shallower and shallower

When a lot of rain shallow lake can not take in all the water and water floods the country, since lake is saline salt is carried by flood far around, salt kills trees = desert.

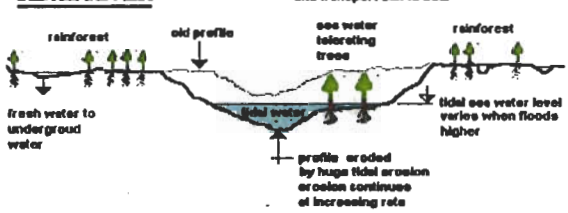
before erosion was rain forest - there was no salt on higher ground to kill the trees.





TIDAL RIVER

Tides are removing salt from country and transport salt to sea.



Transpiration rate from trees and plants is far bigger than evaporation from water surface,
because transpiration surface - is huge in comperison to to water surface evaporation.
specialy after rain or in the morning when leaves are wet

LOW FLAT DESERT LAND

When land becomes flat the fall toward the sea gets to small for river to function
slow running river deposits and eventualy flow to sea is blocked
Water founds the new course toward the lowest ground on flat land
and makes a lake.
At the begining lake water is fresh, but river brings into lake a little salt
and in years fresh water lake is changed to salt lake.
Salt lake kills trees miles around and rainforest land changes to desert.

Solution to reinstate rain forest is desalination of land
that can not be done with rain water only -
to low rainfall in deserts and to small fall toward the sea

Solution is Tidal River where tides run in and out
since tidal river is about sea level, it works similar

Once salt gets into tidal river it will be removed to sea

Since tidal river is about sea level and closer
fall from land is increased
so no sedimentation but erosion.

If tides are high, tidal river will function well.
Amazon river has 6m tides
Australian tides on nort west Australia are up to 12m.

Huge tides make conetruction and maintenance economical.

Desert land is usually flat with little rain
flat land = small fall toward the sea
+ little rain
= sedimentation + salination = desert

costs without tidal erosion to construct and maintain
desalination river system would be prohibitive high.

With construction of tidal river and environment around on north west Australia downstream will be more rain = increased erosion and easier maintenance of existing river systems.

Solution are huge tides with huge tidal erosion
to help construct and maintain tidal river system
to desalinate country.