



Climate Change on Tourism and Adaptation Measures

HERiTAG Final conference

April 3, 2019

Tbilisi



Caribbean Regional Sustainable Tourism Development Programme
CTO Lot 3: Sustainable Tourism Policy Development

Climate Change Science

გლობალური
დათბობა და
სცენარები

CI The Climate is Changing

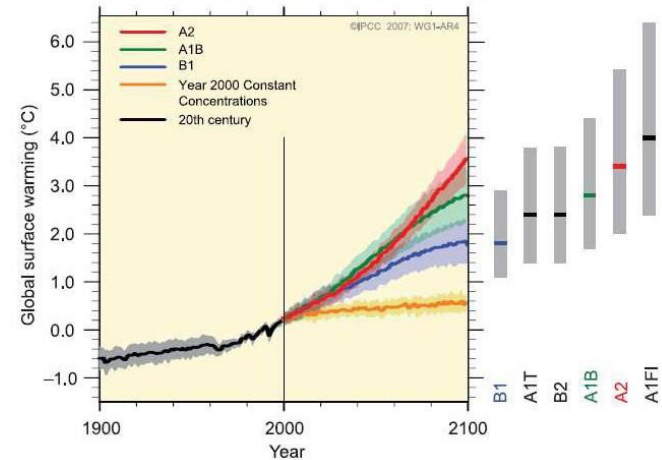
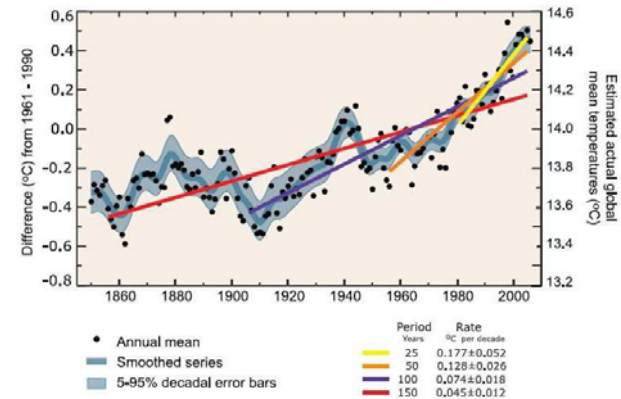
'The warming of the climate system is unequivocal' (IPCC-AR4 2007)

Globally +0.8°C from 1906 to 2005

CI Climate Change Has Just Begun

The pace of climate change is 'very likely' to increase over the 21st century

+1.8 to 6.4°C by 2100



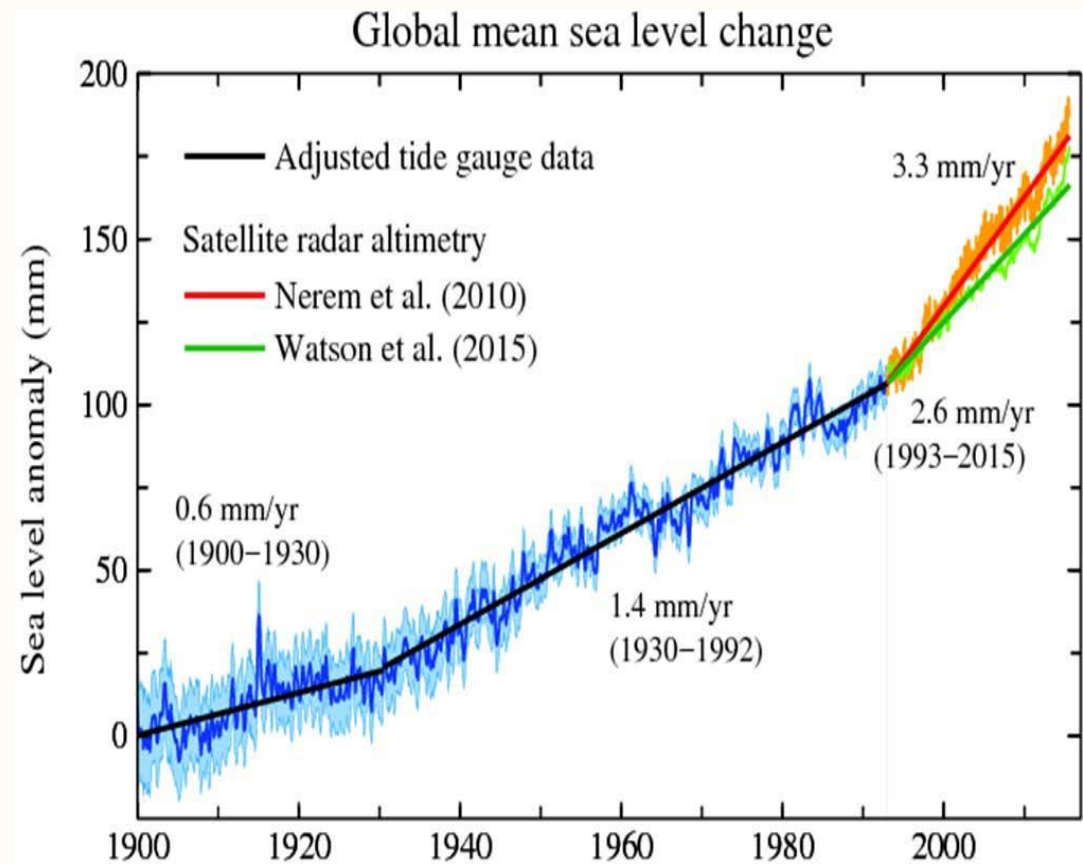
Global SLR and GTR

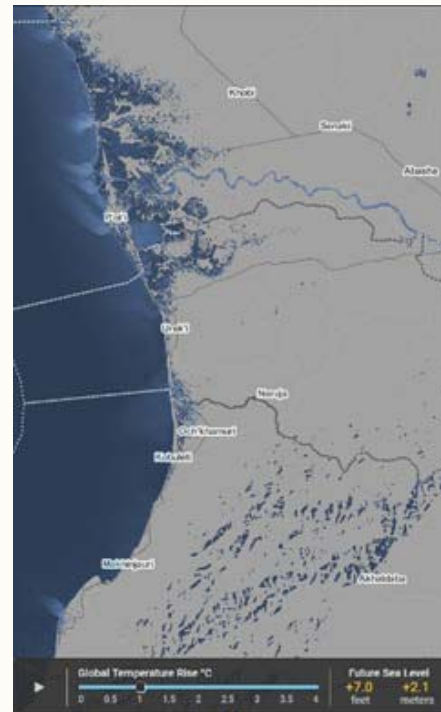
Global Temperature Rise (GTR) today is already at 1.0 C° and this inevitably entails 2.1 m SLR.

UNFCC Paris Agreement is aspiring to limit by year 2100, GTR within the limits of 1.5 C° (equivalent to committed SLR 2.9 m) but no more than 2.0 C° (committed SLR 4.7 m),

Nationally Determined Contribution (NDC) levels ensure GTR around 3.0 C° by 2100 (committed SLR 6.4 m)

Business-As-Usual (BAU) scenario would commit GTR and SLR, respectively, to greater than 4.0 C° and 8.9 m levels.





0.5 C° + 0.7 m (past)

1.0 C° 2.1 m (present)

1.5 C° 2.9 m (Paris min)

2.0 C° 4.7 m (Paris max)

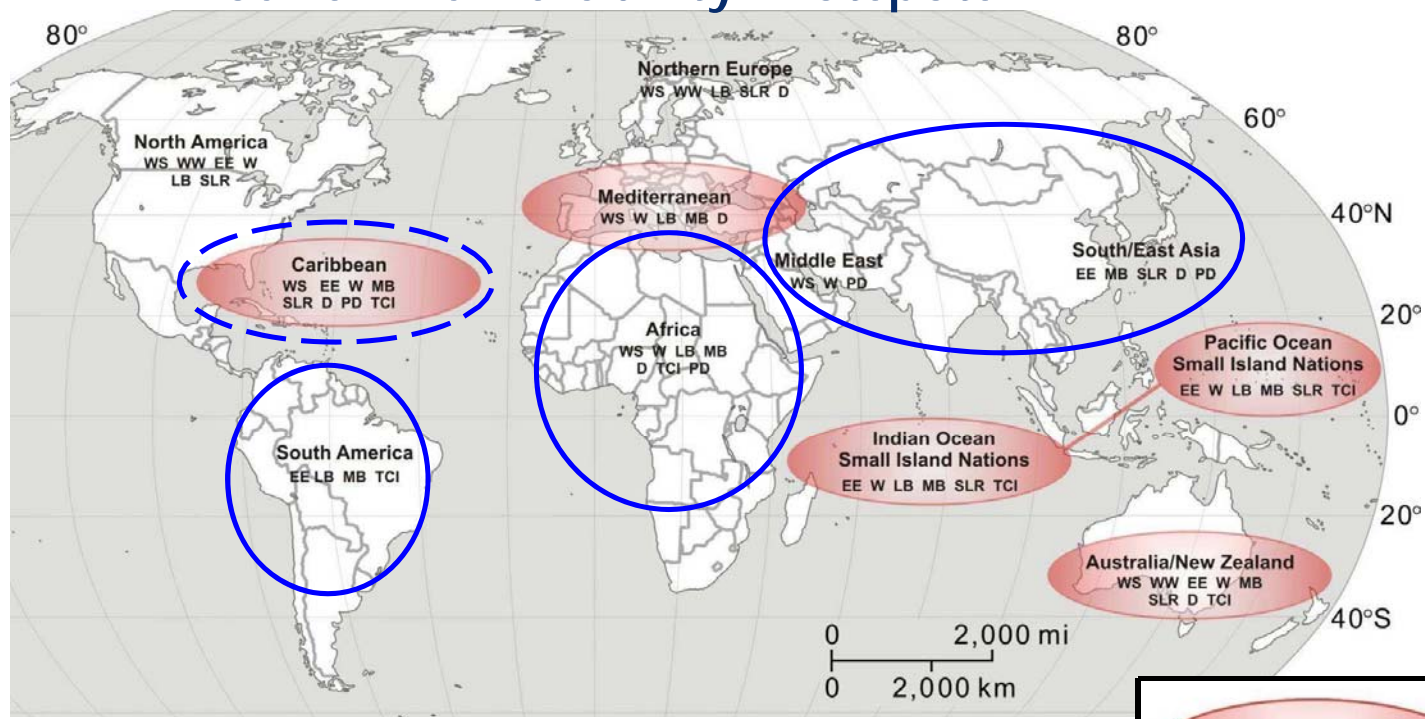
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Tourism Vulnerability 'Hotspots'

ზემოქმედების
შედეგები
„ცხელი
წერტილები“



WS = warmer summers

LB = land biodiversity loss

D = increase in disease outbreaks

WW = warmer winters

MB = marine biodiversity loss

TCI = travel cost increase from mitigation policy

EE = increase in extreme events

W = water scarcity

SLR = sea level rise

PD = political destabilization

Hotspot

Regional Knowledge Gaps

Assessment of Major Impact Types at Tourism Destinations

- CI **Direct climatic impacts**
 - » Warmer Summers
 - » Warmer Winters
 - » Precipitation Changes (water supply)
 - » Increased Extreme Events
- CI **Indirect environmental change impacts**
 - » Biodiversity Loss (terrestrial and marine)
 - » Sea Level Rise
 - » Disease
- CI **Impact of mitigation policy on tourist mobility**
 - » Travel Costs and Destination Choice
- CI **Indirect societal change impacts**
 - » Global/Regional Economic Impacts
 - » Increased Security Risks (social/governance disruption)



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Destination Level Adaptation

ცვლილებების
მიმართ
ადაპტაციის
გამოცდილება

- CI **All** tourism businesses and destinations will need to adapt in order to minimize risks and capitalize on an new opportunities in an sustainable way
 - » *it is no longer sufficient to rely on past experience*

 - CI **Very limited knowledge of the capacity of current adaptations to cope successfully with future climate change**
 - » *some evidence that tourism operators are over-estimating adaptive capacity*
 - » *some tourism stakeholders-regions will require assistance to adapt effectively to climate change*
 - » *in the early stages of identifying what type of assistance is needed in the tourism sector and priority regions*
-



What needs to be done 2020-2050

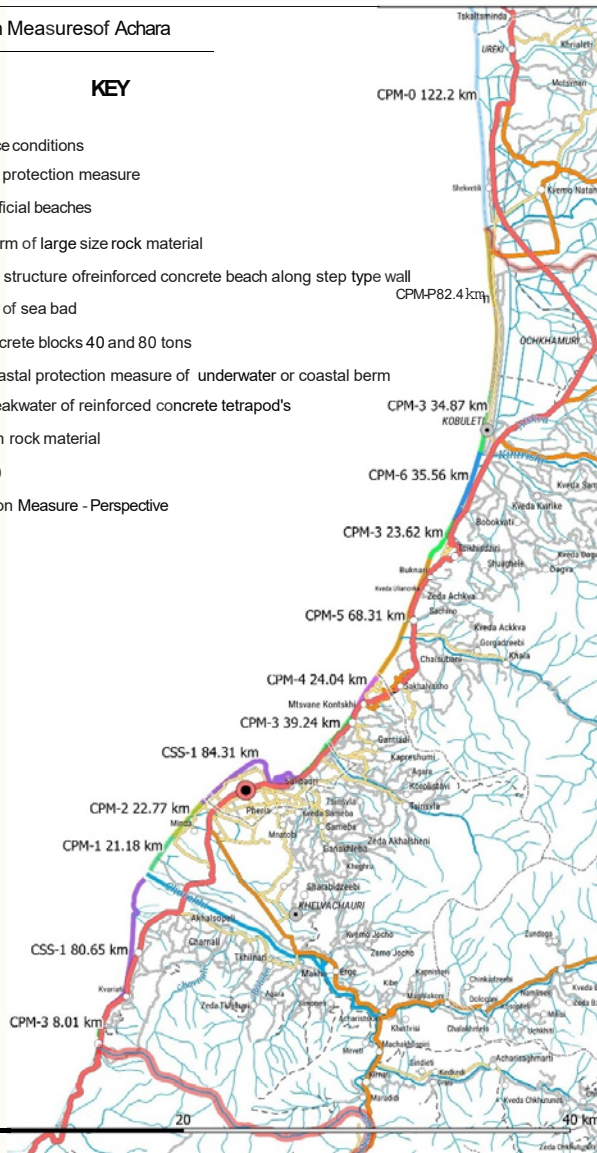
- Diversification of the tourism products and destinations
- Accessibility between destinations
- Urban planning considering climate change adaptation measures.
- Energy efficiency and technological improvement of energy consumption
- Waste management and recycling
- Improvement of water and wastewater sanitation
- Coastal zone protection measures and environmental sensitivity
- Climate change adaptation measures harmonized with legislation, special and economic planning and building norms

INFROSTRUCTURE	Sea level rise				Rainfall						Temperature						Other factors					
	Damage or disruption from coastal flooding	Tide locking	Saline intrusion	Coastal erosion	Damage or disruption from river flooding	Damage or disruption from pluvial flooding	Droughts and low precipitation	Altered capability or efficiency	Biological processes	Stability of earthworks	Severe heat	Severe cold, snow, ice	Altered capacity or efficiency	Subsidence and/or desiccation	Biological processes	Demand for service	Unfavorable geological processes	Lightning strike	Humidity	Fog	Storminess and wind damage	
Railway	X			X	X	X	X	X		X	X	X	X		X	X	X	X			X	
Road	X			X	X	X		X		X	X	X	X		X		X		X	X	X	
Ports and marine transport	X	X		X		X					X	X	X							X	X	
Potable water	X		X	X	X	X	X	X	X		X	X	X	X	X	X						X
Waste water and sanitation systems	X	X	X		X	X	X		X		X	X	X	X	X	X						
Flood and coastal erosion protection	X	X		X	X	X			X		X		X	X							X	
Renewable energy generation	X				X	X	X	X					X									X
Power systems	X				X	X					X		X				X	X				X
Energy demand	X				X	X	X				X	X				X						

Costal Line Protection Measures of Achara

KEY

- Costal_line_constructions
- CSS-1 Dynamic balance conditions
- CPM-0 Free of coastal protection measure
- CPM-1 Creation of artificial beaches
- CPM-2 Coast along berm of large size rock material
- CPM-3 Hydrotechnical structure of reinforced concrete beach along step type wall
- CPM-4 Slag backfilling of sea bad
- CPM-5 Reinforced concrete blocks 40 and 80 tons
- CPM-6 Deformable coastal protection measure of underwater or coastal berm
- CPM-7 Underwater breakwater of reinforced concrete tetrapod's
- CPM-8 Large size torn rock material
- CPM-9 Spur dike (pier)
- CPM-P Coast Protection Measure - Perspective



Costal Line Protection Measures of Photi Area

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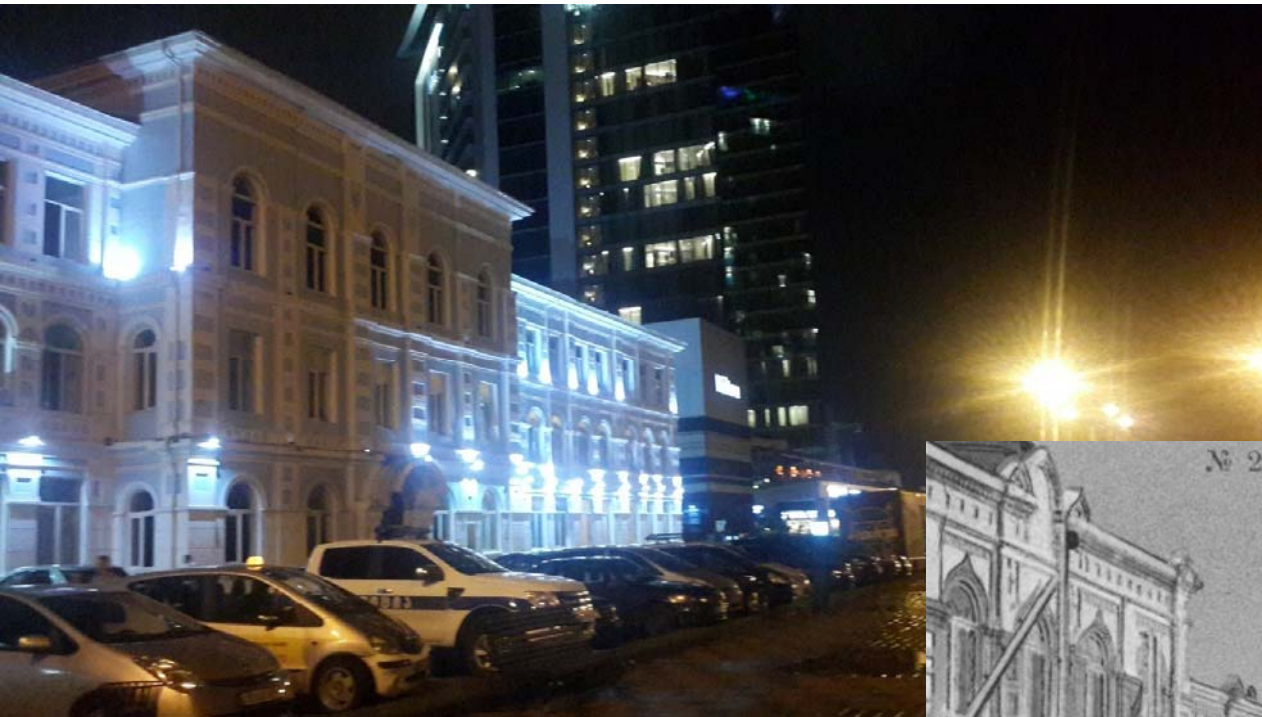
Coastal Line Protection Measures of Anaklia Area

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Type	Coastal Protection Measures	Coast section KM
	Total coastal line (Ajara, Guria and Samegrelo-Zemo Svaneti sections)	126.85
CPM-0	Free of coastal protection measure	51.41
CPM-1	Creation of artificial beaches	5.93
CPM-2	Coast along berm of large size rock material	3.08
CPM-3	Hydro-technical structure of reinforced concrete beach along step type wall	9.77
CPM-4	Slag backfilling of sea bad	2.40
CPM-5	Reinforced concrete blocks 40 and 80 tons	13.30
CPM-6	Deformable coastal protection measure of underwater or coastal berm	3.56
CPM-7	Underwater breakwater of reinforced concrete tetrapod's	0.38
CPM-8	Large size torn rock material	10.27
CPM-9	Spur dike (pier)	2.03
CPM-P	Coast Protection Measure – Planned / Perspective	8.24
CSS-1	Dynamic balance conditions	16.50



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