מרכז השלטון המקומי בישראל

מרכז השלטון האזורי בישראל
שומרים על הבית

המכון לשלטון מקומי ע"ש שלמה (צ'יץ) להט
הפקולטה למדעי החברה ע"ש גרשון גורדון
אוניברסיטת תל אביב

פורום רשויות החוף
Coastal Authorities Forum, Israel

Coastal Cities at the Forefront of CLIMATE CHANGE

OPHIR PAZ PINES
Director of the Israeli coastal authorities forum &
The local government institute
Tel aviv university

DR. ORLI RONEN
Coastal authorities forum &
PlanNetZero CLIMATE PROGRAM
Tel aviv university

COASTAL CITIES OF ISRAEL

"The sea and the coast are national natural resources - a public domain, we must commit to sustainable development, so that future generations can enjoy them".

(Source: the convention of the Israeli Coastal Authorities' Forum).

The Israel Coastal Cities Forum was established in 2015 by the mayors of the 22 coastal authorities of Israel, from Nahariya in the north, through Eilat in the south, including major cities like Haifa and Tel Aviv Yafo. Coastal Authorities, as you well know, face unique challenges, and share common boundaries and responsibilities. As such, they established the forum in order to strengthen their cooperation and joint mission.

Key Principles

- Inter Municipal Cooperation; between small and large municipalities, Regional and Local
- Uphold the right of every person to enjoy an adequate coastal environment
- Preserve the natural and environmental attributes
- Promote and engage Public awareness and involvement in Coastal Preservation
- Protect the Coastal History and Heritage
- Act together to protect and reinforce the Coastal Cliff
- Reduce coastal pollution
- Avoid development and construction on the coastal line
- Promote International cooperation and exchange of know-how

אמנת רשויות החוף

נחתמה בכנס אשדוד לקיימות, כ"ז חשוון התשע"ו,
9 בנובמבר 2015

הצהרה

רשויות מקומיות:

מועצות אזוריות

24 Local Authorities:

16 cities and towns, 8 regional authorities

km 42

km 1

465,000

14,000

SCOPE

reference space

sea

beach

set back zone

400 meters

100 meters

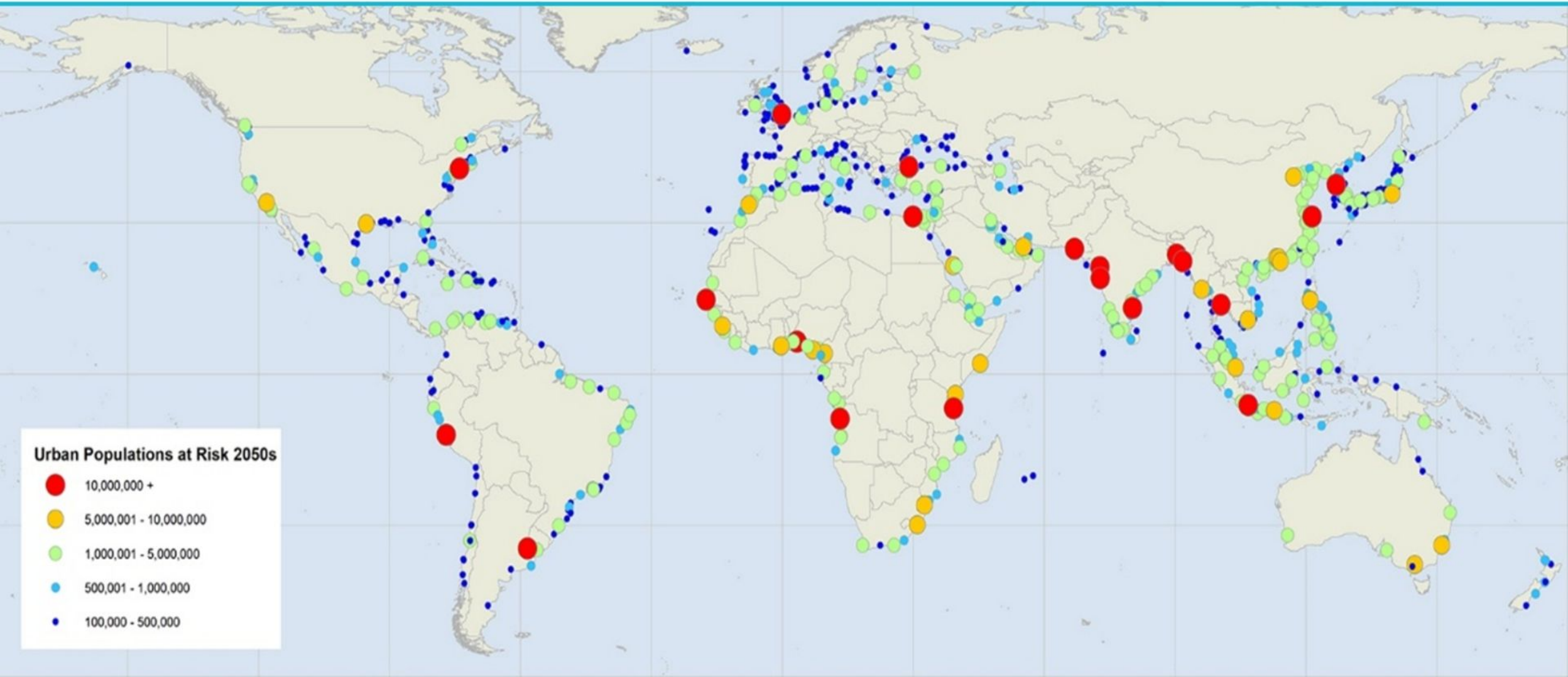
200 meters

	Annual visitors	# of supervised beaches
Eilat	6,250,000	5
Haifa	9,000,000	12
Tel Aviv	9,000,000	13
Rishon	2,500,000	6
Netanya	2,500,000	8
Hertzelia	1,000,000	7
Ashkelon	200,000	6
Ashdod	200,000	7
Nehariya	40,000	2
Bat Yam	NA	6
Hedera	NA	2
Akko	NA	2

CITIES AT THE FOREFRONT – GLOBAL CONTEXT

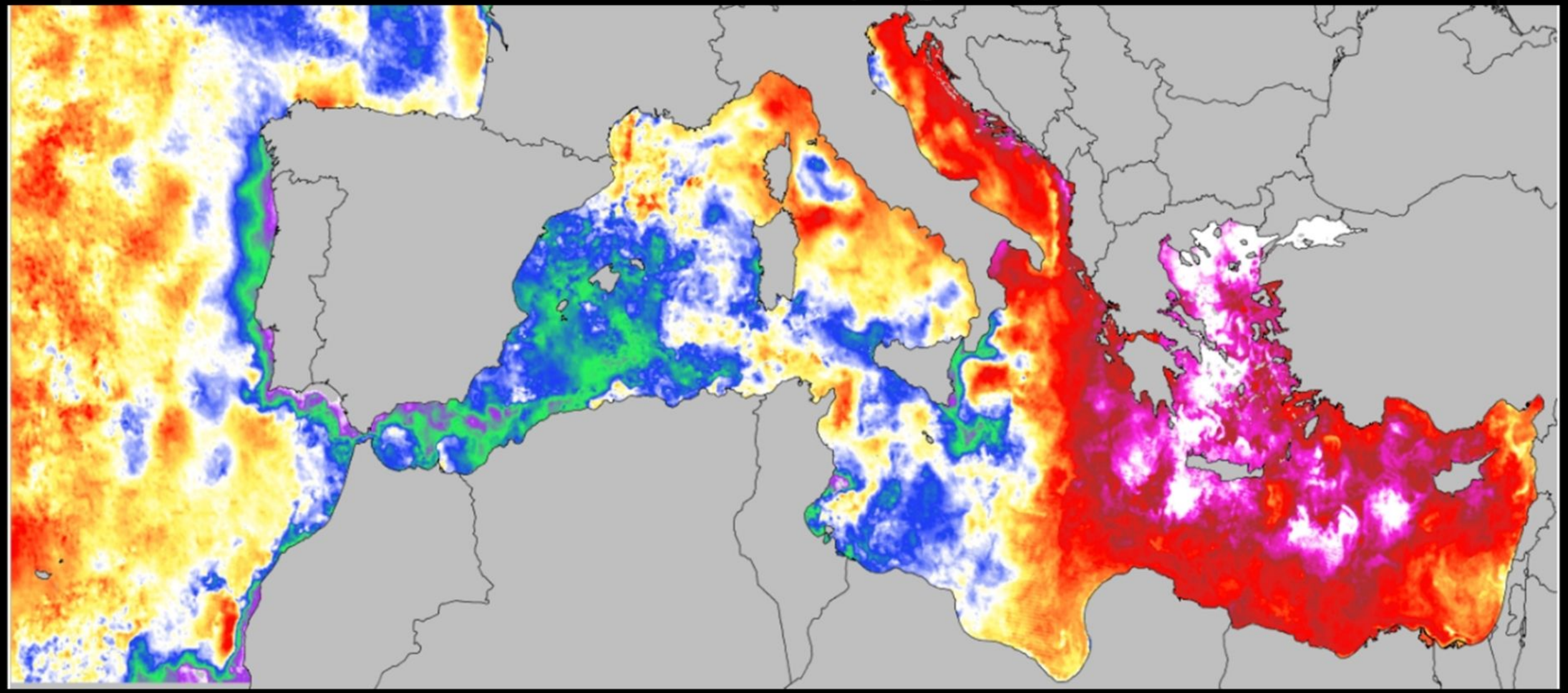
75% of the big cities are coastal cities

In Israel, 50% of the big cities are coastal cities



CNR-MED SST Analysis 20/November 2019

www.severe-weather.eu Andrej Flis (@Recretos)

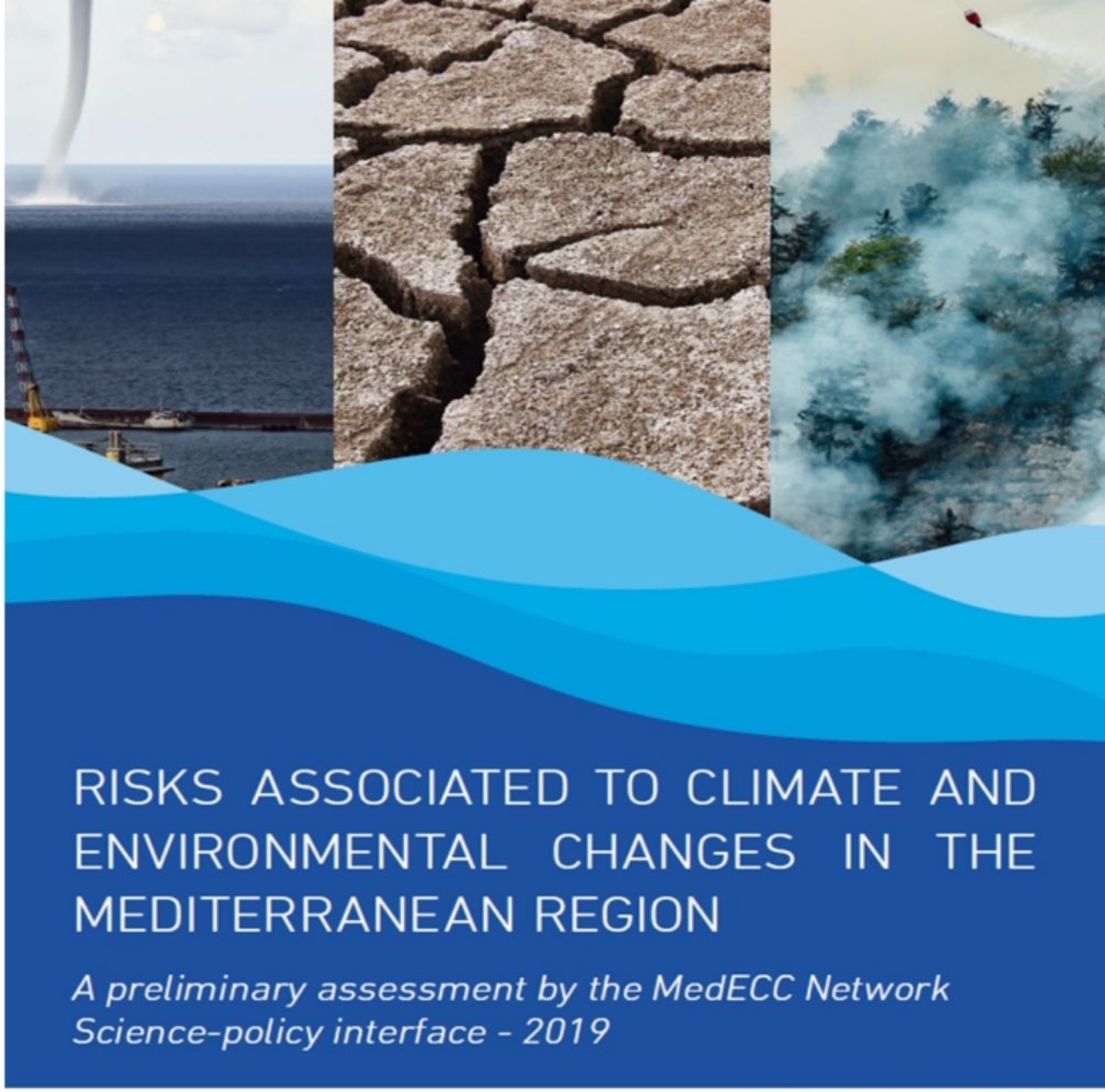


Sea surface temperature anomaly (C) 1982-2012 Climatology

-3 -2 -2 -1 0 1 2 2 3

CLIMATE CHANGE IN THE MEDITERRANEAN REGION

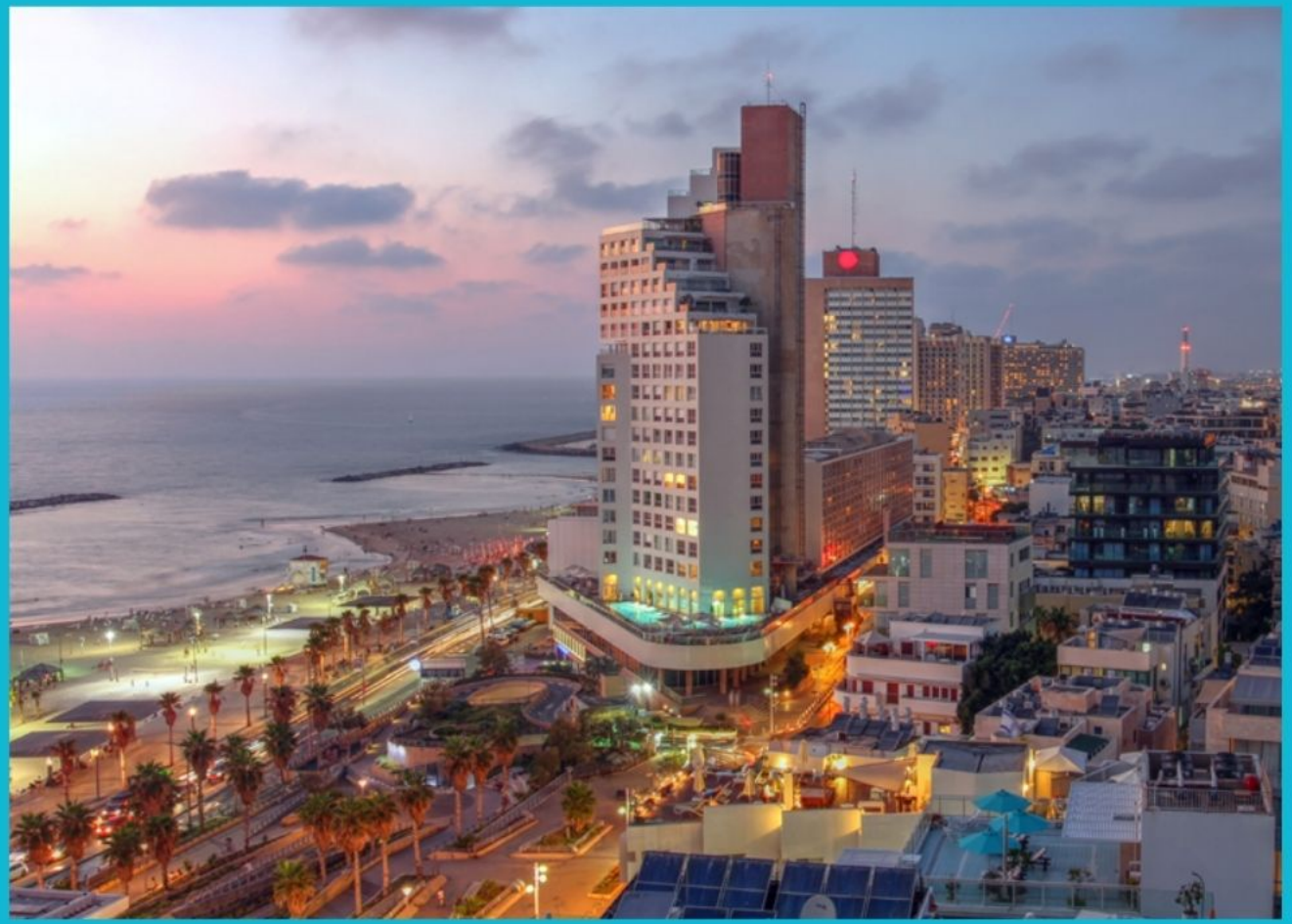
- **Mediterranean coasts are expected to suffer further severe disturbance due to intensive urbanization and other land uses.**
- **In the future, coastal storms and floods, probably more frequent and intense, will have adverse impacts, particularly in Mediterranean coastal cities (medium confidence).**
- **Only few Mediterranean cities have local climate plans that consider mitigation and adaptation in a joint manner.**
- **Cities, in particular, need to become more resilient to environmental change as impacts will be disproportionally high in these locations due to a concentration of population and assets in combination with hazard-amplifying conditions (e.g., increased runoff through soil sealing, urban heat island effect).**



COASTAL HAZARDS – QUADRUPLE JEOPARDY

SEA LEVEL RISE

STORM-WATER OVERFLOWS



MORE EXTREME WEATHER

MORE PEOPLE, MORE BUILDINGS

KEY CHALLENGES

- Limited authority of local governments
- Lack of adequate funding for management of land and sea
- Lack of collaboration between local authorities
- Lack of civic and stakeholder engagement
- Limited enforcement
- Great variation in management mechanisms and practices among coastal authorities
- LIMITED CLIMATE AWARENESS AND READINESS

CITIES AT THE FOREFRONT – ISRAEL CONTEXT

משרד הפנים

משרד האנרגיה
www.energy.gov.il

המשרד להגנת הסביבה
الوزارة لحماية البيئة
Israel Ministry of Environmental Protection

GUIDELINES FOR LOCAL COASTAL ADAPTATION PLANS

פורום רשויות החוף
Coastal Authorities Forum, Israel

COASTAL RESILIENCE

RESPONSE TO RISING DEMAND

1.Open new supervised beaches
2.Expansion of beach services
3.Expansion of shade
4.Accessability and mobility to the coast

PROTECTION OF POPULATION AND ASSETS

5.Adaptation of coastal buildings to rising sea levels
6.Readiness to storm flooding
7.Readiness to coastal impacts
8.Assessment of risks to coastal assets

PROTECTION OF COASTAL CLIFFS

9.Establishment of Coastal Climate Change monitoring mechanisms
10. Complete cessation of flows from the east
11.Expansion of Coastal Cliffs protection

PRESERVATION OF THE COASTAL ECOLOGICAL SYSTEMS

12.Nature Based Solutions
13.Protection from invasive species
14.Protection of Rocky Reefs

CLIMATE ADAPTATION

Hazards | Events and disasters that can occur

Vulnerability | Sensitivity of communities to disaster and people or property exposed to them

Capacity | The ability to cope with and absorb the disaster

Hazards + Vulnerability + Capacity = Resilience

*אין בישראל איסוף נתונים מוסדר לגבי נפגעים מאסונות שאינם בידי אדם, לא ברמה הממשלתית ולא ברמה המקומית.

ISRAEL – CLIMATE TRENDS

MORE EXTREME

Increase in extreme weather events

HIGHER

Gradual Sea Level Rise

DRIER

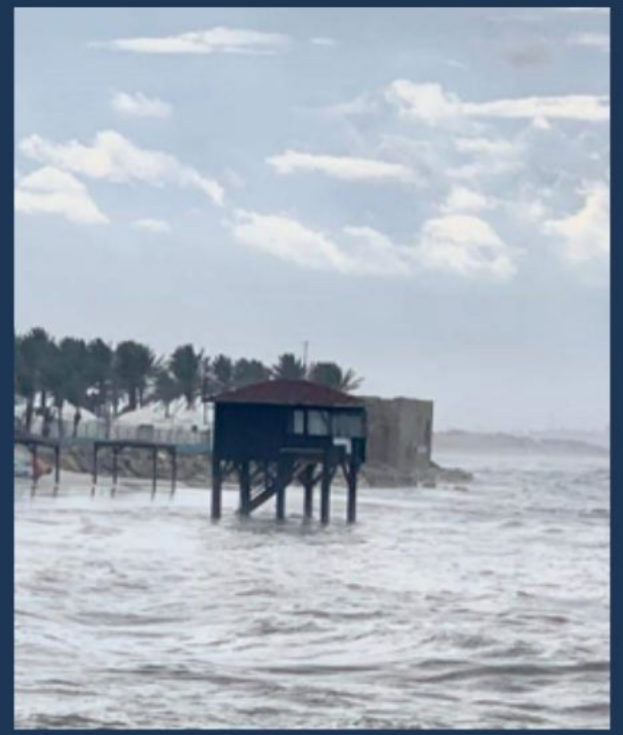
By 2100 precipitation will decrease by 15-25%

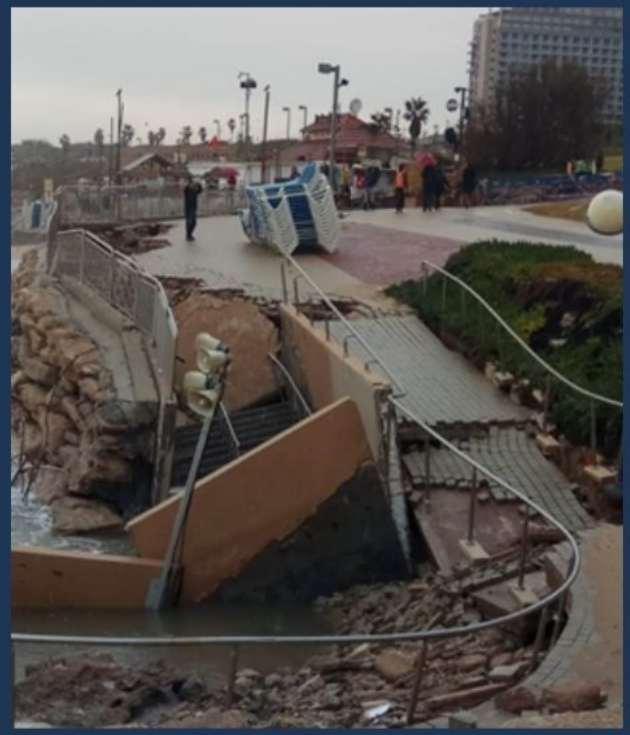
HOTTER

Since 1950 the average temp. rose by 1.4 degrees

VULNERABILITY

- CLIFF EROSION
- INFRASTRUCTURE
- RUNOFF
- SEA LEVEL RISE





RISING SEA LEVELS – CONTINGENCY SCENARIOS - Israel Oceanographic and Limnological Research Inst.

	2050	2070	2100
Moderate Scenario	0.14-0.32	0.21-0.47	0.27-0.68
Mid Range Scenario	0.15-0.33	0.24-0.51	0.39-0.82
Severe Scenario	0.18-0.37	0.3-0.61	0.58-1.1

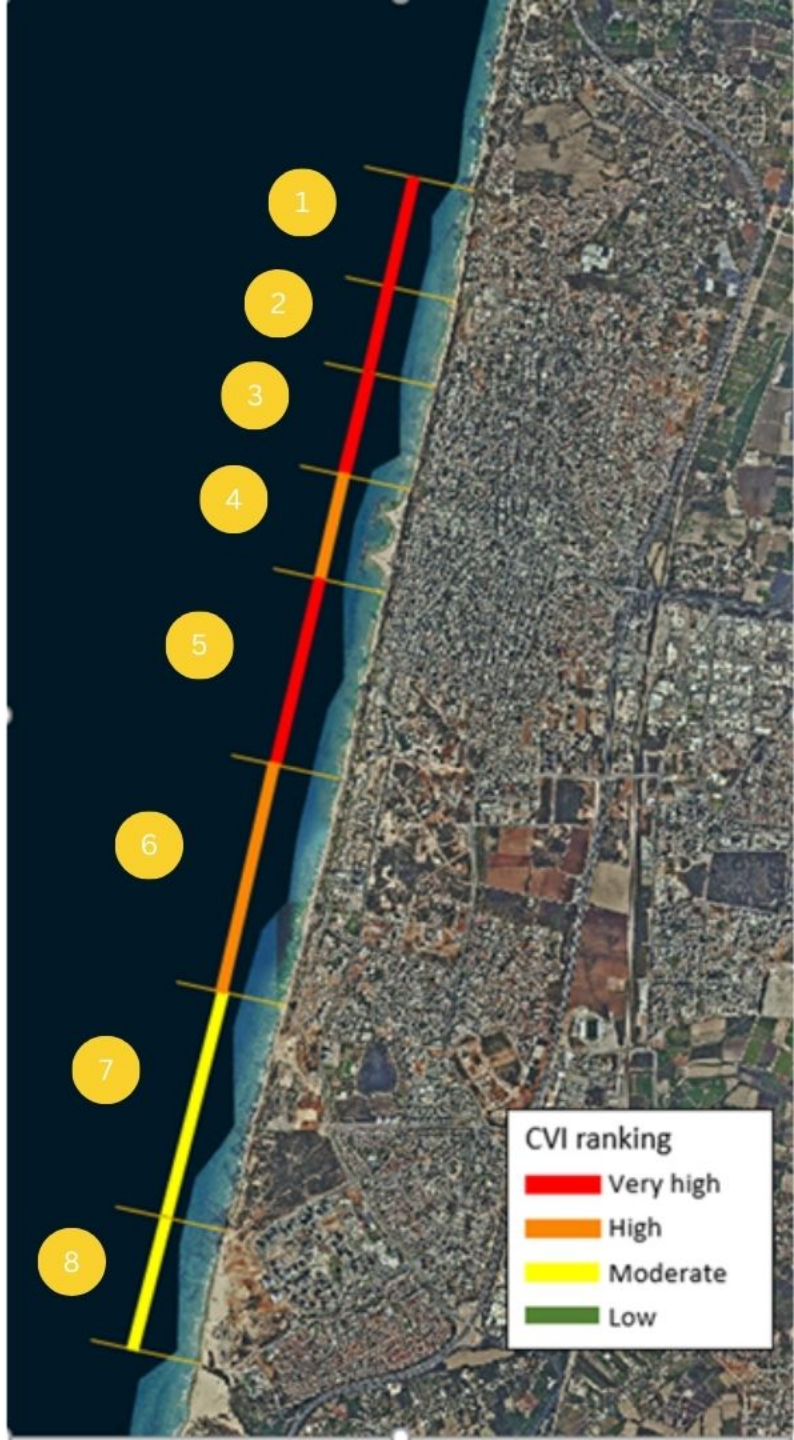
NATIONAL SEA LEVEL RISE CONTINGENCY SCENARIOS TO BE PUBLISHED BY AUGUST

Case Study, Netanya

- Central city, along a coastal strip
- "The Israeli Riviera“
- 45% increase in population by 2030 (Netanya master plan)
- Very high and steep coastal cliff reaches a peak of above 40 m

CVI, Netanya

Variable	Segment							
	1	2	3	4	5	6	7	8
Geomorphology and geology	5	5	5	5	5	5	5	4
Erosion	4	4	5	4	4	3	3	3
Sea level rise	5	5	5	5	5	5	5	5
Wave height	4	4	4	4	4	4	4	4
Emerged beach width	5	4	4	4	5	4	4	2
Land use	3	3	3	4	4	3	1	3
Coastal defenses	4	5	5	3	5	5	2	5
Coastal cliffs	4	4	3	3	4	3	4	-
	$CVI = \sqrt{\frac{a_1 * a_2 * \cdots .. a_n}{n}}$							
CVI Value	109.54	109.54	106.07	84.8	141.42	82.1	34.64	32.07
CVI Category	Very High	Very High	Very High	High	Very High	High	moderate	moderate



Coastal Management ACTION

2022

- Treating drainage in the coastal strip

2024

- Carrying out a risk assessment and building a set of guidelines for climate-adapted operational and management of the coastal strip, including the coastal hinterland, ecosystems and assets
- Comprehensive economic damage analysis in the coastal strip
- Adding shading on the beaches
- Assessing nature-based solutions to protect the coastal strip

2030

- Monitoring marine and coastal ecosystems, cliffs and infrastructure

Conclusions

Today already, the coastal vulnerability to the climate change effects is high, and projections are an increase in all phenomena, which means adaptation measures must begin today.

There is an acute information gap needed for the adaptation plans, especially in the field of local projections

Coastal development has a major impact on coastal vulnerability that requires attention at the planning stage

Any action taken to reduce the level of vulnerability of one parameter, may affect a one or several other parameters, and therefore it required that any plan must include all the influencing factors.

פורום רשויות החוף
Coastal Authorities Forum, Israel

המכון לשלטון מקומי ע"ש שלמה (צ'יץ) להט
הפקולטה למדעי החברה ע"ש גרשון גורדון
אוניברסיטת תל אביב

מרכז השלטון **האזורי** בישראל
שומרים על הבית

מרכז השלטון המקומי
בישראל
לבית שלכם יש כתובת!

Thank you