

From Hydrological To Impact Based Forecasts

EFAS 18th Annual Conference Israel National Flood Forecasting Center Horowitz., T., Rinat , Y., Giguzin, D.



ISRAEL'S VARIATIONS IN: CLIMATE, BASIN RESPONSES, VULNERABILITY & RISK TYPES



IMPACT IS DIFFERENT FOR THE SAME PRECIPITATION



Floods Potential [Risk & Damage]



FORECAST UNCIRTAINTY IS HIGH



IDENTIFY THE NEEDS

PREPARATION FOR FLOODING EVENT REQUIRES SPREADING FORCES AND TOOLS AROUND THE COUNTRY:

- INDICATE SAFE AREAS
- MAP TYPES OF THREATS
- CREATE CONSISTENT AND CLEAR LANGUISH FOR THE BULLETINS AND FORECASTS
- POINT VULNERABLE AREAS FOR ROAD BLOCKS THAT COULD DISCONNECT TRANSPORT AND SERVICE
- LOW RISK AND LOW PROBABILITY EVENTS ARE FREQUENT AND OVERLOAD THE AGENCIES
- NEW FORECAST UPDATES OR UNCERTAINTIES ADD CONFUSION
- INFORMATION IS SCATTERED BETWEEN MANY AGENCIES AND MUST BE STRUCTURED TO CREATE MEANINGFUL CONCLUSIONS AND GUIDELINES.
- UNCERTAINTY IN UNMONITORED BASINS NO MODELED FLOW RESPONSE
- EFFECTIVE DISPLAYS FOR TIME PROGRESSION

IDENTIFY AVAILABLE SOLUTIONS

- MANY RECURRENT FLOOD IMPACTS ARE DOCUMENTED FOR BOTH MONITORED AND UNMONITORED BASINS (AUTHORITIES, MEDIA, INFRASTRUCTURE COMPANIES). ITS POSSIBLE TO ASSUME RETURN PERIODS FOR THESE FLOODING AND DEDUCE FLOW LEVELS THAT COULD CREATE SIMILAR IMPACTS.
- IDENTIFY FLOOD LEVELS FOR ROAD BLOCKS BY DRAINAGE INFRASTRUCTURE DATA
- IDENTIFY FLOOD LEVELS FOR ANY FLOODING BY DOCUMENTED EVENTS AND MEASURED DATA
- TRANSLATION OF THE HYDROLOGICAL FORECASTS TO RISK TYPES (ASK CLIENTS FOR THEIR INTERESTS, EXAMPLES AND SUPPORTING DATA)
- PLOT MAPS FOR DIFFERENT TYPES OF RISKS EACH CLIENT CAN CHOOSE THEIR FOCUS BY RELEVANCE
- COMMON LANGUISH: RISK TYPE AND LEVEL CAN BE LINKED TO REFERENCE CASES (MUST BE DEFINED TOGETHER WITH DRAINAGE AUTHORITIES)
- APPLY POINTS AND TEXT FOR RECURRENT FLOODING THEY ARE FAMILIAR WITH HELP CREATING A COMMON LANGUISH AND HELP EMERGENCY BODIES AND AGENTS IN THE FIELD UNDERSTAND THE TYPE OF IMPACT TO PREPARE TO.
- RISK MAPS DO NOT CHANGE AS MUCH WITH FORECAST UPDATES (LESS DATA, LESS SENSITIVE) AND IF THEY DO, THE CHANGE IS PRETTY CLEAR.

FIRST DEGREE FOCUS: ANALYZE BASIN RESPONSES





2ND DEGREE FOCUS : DEVIDE BASINS TO SUB-BASINS ACORDING TO EXPECTED IMPACTS



RISK LEVELS



3RD DEGREE FOCUS: PLOT SEPARATE MAPS FOR DIFFERENT RISK TYPES



*LOW FLOW: estimated flows of <1:5yr return periods

IMPACT ANALYSIS: FLOODS LOG (DRAINAGE AUTHORITIES, NATIONAL PARKS, ROAD COMPANIES)

Dangerous to hike for Flow > 1:5yr
 Extreme Danger to hike for Flow > 1:10 yr

Medum risk for in Rd.70 for Flow > 1:5 yr Danger in Rd.70 for Flow>1:20 yr;

Danger in Rd.90 for Flow>1:10 yr; Extreme Danger in Rd.90 for Flow > 1:20 yr

No risks* in Rd.90 for Flow > 1:100 yr
 *Large bridge with high capacity for flows



INTENSITY: HIGH* PROBABILITY: MEDIUM *estimated flows of 10-20yr return periods

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RISK RULES: FLOOD POINTS + POLYGONS



MEDIUM HIGH

LOW

INTENSTY:

PROBABILITY:



RISK RULES: FLOOD POINTS + POLYGONS





RISK RULES: PROBABILITY & VULNERABILITY





FOR THE FORECASTED FLOW LEVEL THE RED POINTS ARE AT EXTREME DANGER. MEDIUM PROBABILITY BROUGHT THE RISK LEVEL DOWN TO DANGEROUS

Risk Rules

Golan-Kinneret

WARNING	NO WARNING	Standard warning	DANGER	EXTREME DANGER
CODE	0	1	2	3

Standard warning	There is a chance of a dangerous situation and appropriate precautions must be
Stalidard warning	taken. However, the predicted situation is fairly common
Denger	The predicted condition is dangerous and uncommon. It is likely that it will cause
Danger:	serious damage to lives and property. All precautions must be considered
-	The predicted situation is very dangerous and rare, high chance of damage to
Extreme danger	infrastructure and life over a large area. Be prepared for an unusual response



				TRAVEL	DOVDS	OVERBAN	k flooding	
	OVERBANK	ROADS	TRAVEL ROUTS	ROUTS	RUADS	HOMES	FIELDS-AGRI.	SUB_BASIN NAME
				0	0	0	0	DAN
<1.5 fR				0	0	0	0	HERMON
+	- ¢בנון +	- «בנון	+ - ¢בנון	0	0	0	0	JORDAN, UPPER-EAST
· 202 85	· ARS		° NO S	0	0	0	0	ORVIM
	numer in the second second		adine in	1	0	0	0	MESHUSHIM
				1	0	0	0	YEHUDIA
				0	0	0	0	DLAYOT
אראין אין אין אין אין אין אין אין אין אין	The second	A A CARA	A A A A A A A A A A A A A A A A A A A	0	0	0	0	SFAMNUN
Sof in Rand	Sand Jakan	Sand Salar	Dans In Carl	0	0	0	0	KANEF
אראיך אראין אראין אראין אראין	Contraction of the second	WARDER AND	Contraction of the Contraction	1	0	0	0	SEMECH-ELAL
Prove A A A				0	0	0	0	DGANIA-EIN GEV
בנרח קבי קנורעאן		cer a cerra		0	0	0	0	YARMUK, UPPER
the second second	Y There	Star & Star	X X X	0	0	0	0	YARMUK, LOWER
min } ~ ~ ~		2 C Jam	P C C Farm	0	0	0	0	JURDAN, UPPER-SW
En Smith and	C 2 C	Curra Curra	Con Son Con	0	0	0	0	
		1 million		0	0	0	0	KORAZIM
				TRAVEI		OVERBANK		
				TRAVEL ROUTS	ROADS	OVERBANH HOMES	(FLOODING FIELDS-AGRI.	SUB_BASIN NAME
		DOADS		TRAVEL ROUTS	ROADS	OVERBANK HOMES	FIELDS- AGRI.	SUB_BASIN NAME
MEDIUM FLOW	OVERBANK	ROADS	TRAVEL ROUTS	TRAVEL ROUTS	ROADS	OVERBANK HOMES 0 1	FIELDS-AGRI .	SUB_BASIN NAME
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 1 1 1	ROADS	OVERBANK HOMES 0 1 0	FIELDS-AGRI . 0 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS		TRAVEL ROUTS 1 1 1 1 1	ROADS 0 1 1 0	OVERBANK HOMES 0 1 0 0	FIELDS-AGRI. 0 1 1 1 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 1 1 1 1 1 2	ROADS 0 1 1 0 1 0 1 0 1 0 1 0 1 0 1 1 0 1 0	OVERBANK HOMES 0 1 0 0 0 0	FIELDS-AGRI. 0 1 1 1 1 0	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 1 1 1 1 1 2 2	ROADS 0 1 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0	OVERBANK HOMES 0 1 0 0 0 0 0	FIELDS-AGRI. 0 1 1 1 1 0 0 0	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 1 1 1 1 2 2 2 1	ROADS 0 1 0 1 0 1 0 0 1 0 0 0 0 0 0 0 0	OVERBANK HOMES 0 1 0 0 0 0 0 0 1	FIELDS-AGRI. 0 1 1 1 1 0 0 0 0 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 1 1 1 1 2 2 2 1 1 1	ROADS 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	OVERBANK HOMES 0 1 0 0 0 0 0 0 0 1 0	FIELDS-AGRI . 0 1 1 1 1 0 0 0 0 1 1 1 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 1 1 1 1 2 2 2 1 1 1 1 1	ROADS 0 1 0 1 0 1 0 0 0 0 0 0 1 1 0 0 0 0 1 0 1 0 0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 0 1 0	OVERBANK HOMES 0 1 0 0 0 0 0 0 1 0 1 0 1	FIELDS-AGRI . 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 1 1 1 1 2 2 2 1 1 1 1 1 2	ROADS 0 1 0 1 0 0 1 0 0 0 0 0 1 0 0 0 0 1 0	OVERBANK HOMES 0 1 0 0 0 0 0 0 0 1 0 1 0 1 1 1	FIELDS-AGRI . 0 1 1 1 1 0 0 0 0 1 1 1 0 0 1 1 0 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 1 1 1 2 2 1 1 1 1 2 1 2 1 1 2 1	ROADS 0 1 0 1 0 0 0 0 0 0 1 0 0 1 0 1 0 1 0	OVERBANK HOMES 0 1 0 0 0 0 0 0 0 1 0 1 0 1 1 1 1	FIELDS-AGRI . 0 1 1 1 1 0 0 0 0 1 1 1 0 0 1 1 0 1 1 1 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 1 1 1 2 2 2 1 1 1 2 1 2 1 2 1 1 2 1 1 2	ROADS 0 1 0 0 1 0 0 0 0 0 0 0 1 0 0 1 0 0 1 0	OVERBANK HOMES 0 1 0 0 0 0 0 0 1 1 0 1 1 1 1 1 1	FIELDS-AGRI . 0 1 1 1 1 0 0 0 1 1 1 0 1 1 0 1 1 1 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV YARMUK, UPPER
HEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 1 1 1 2 2 2 1 1 1 2 1 2 1 1 2 1 1 1 1	ROADS 0 1 0 1 0 0 0 0 0 0 0 0 1 0 0 1 0 0 1 1 0 1 1 0 1 1 0 1	OVERBANK HOMES 0 1 0 0 0 0 0 0 1 1 0 1 1 1 1 1 1 1 1	FIELDS-AGRI . 0 1 1 1 1 0 0 0 0 1 1 0 1 1 0 1 1 1 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV YARMUK, UPPER YARMUK, LOWER
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 1 1 1 2 2 2 1 1 1 2 1 1 2 1 1 1 1 1 1	ROADS 0 1 0 0 0 0 0 0 0 0 0 0 1 0 0 1 0 0 1 0 0 1 1 0 1 1 0 1	OVERBANK HOMES 0 1 0 0 0 0 0 0 0 1 0 1 1 1 1 1 1 1 1	FIELDS-AGRI . 0 1 1 1 1 0 0 0 0 1 1 0 1 1 0 1 1 1 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV YARMUK, UPPER YARMUK, LOWER JURDAN, UPPER-SW
HEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 1 1 1 2 2 2 1 1 1 2 1 1 1 1 1 1 1 1 1	ROADS 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 0 1 0 1 0 1 0 1 1 1 1 1 0 1	OVERBANK HOMES 0 1 0 0 0 0 0 0 1 0 1 1 1 1 1 1 1 1 1	FIELDS-AGRI. 0 1 1 1 0 1 0 1 0 1 0 1 0 1 1 1 1 1 1 1 1 1 1 1 0	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV YARMUK, UPPER YARMUK, LOWER JURDAN, UPPER-SW OR-COAH

HIGH FLOW	OVERBANK	ROADS	TRAVEL ROUTS	TRAVEL	ROADS	OVERBAN	K FLOODING	
1:10-20 YR	(HOMES)			ROUTS	0	HOMES	FIELDS-AGRI.	
•	3 182	5	A B B	2	1	2	1	
				2	1	0	2	
				2		0	1	ORVIM
			γ	3	1	1	0	MESHISHIM
	K I MA			2	0	1	0	
7 Card	Red and A			2	0	2	1	DLAYOT
for the the				2	0	0	1	SFAMNUN
		מני הנפיר		2	1	1	0	KANEF
		SID		2	0	1	1	SEMECH-ELAL
				2	1	2	1	DGANIA-EIN GEV
				1	0	1	1	YARMUK, UPPER
				2	1	2	1	YARMUK, LOWER
and and and a set of the set of t				2	1	2	1	JURDAN, UPPER-SW
ער הבור דב	Start .	Sand -	- Free	1	1	1	0	OR-COAH
<u>warna</u>		Con Con		1	1	1	0	KORAZIM
EXTREME FLOW	OVERBANK	ROADS	TRAVEL ROUTS		ROADS			SUB BASIN NAME
EXTREME FLOW	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 3	ROADS	OVERBANI HOMES 2	K FLOODING FIELDS-AGRI. 0	SUB_BASIN NAME
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 3	ROADS	OVERBAN HOMES 2 3	K FLOODING FIELDS-AGRI. 0 1	SUB_BASIN NAME DAN HERMON
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS		TRAVEL ROUTS 3 3 3	ROADS 0 1 2	OVERBAN HOMES 2 3 0	K FLOODING FIELDS-AGRI. 0 1 2	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS		TRAVEL ROUTS 3 3 3 3 3	ROADS 0 1 2 0 0	OVERBAN HOMES 2 3 0 0	K FLOODING FIELDS-AGRI. 0 1 2 2	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 3 3 3 3 3 3 3 3	ROADS 0 1 2 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OVERBAN HOMES 2 3 0 0 2 2	K FLOODING FIELDS-AGRI. 0 1 2 2 2 0	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 3 3 3 3 3 3 3 3 3 3 3 3 3	ROADS 0 1 2 0 1 0 1 0 1 0	OVERBAN HOMES 2 3 0 0 0 2 2 2	K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 0	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 3	ROADS 0 1 2 0 1 0 1 0 1 0 0 0	OVERBAN HOMES 2 3 0 0 0 2 2 2	K FLOODING FIELDS-AGRI. 0 1 2 2 2 0 0 0 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 3	ROADS 0 1 2 0 1 0 1 0 0 0 0 0	OVERBAN HOMES 2 3 0 0 0 2 2 2 2 0	K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 0 0 1 1 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 3	ROADS 0 1 1 2 0 1 1 4 0 1 0 1 0 1 0 1 0 2	OVERBAN HOMES 2 3 0 0 2 2 2 2 2 0 2 0 2	K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 0 1 1 1 1 0	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 3	ROADS 0 1 1 2 0 1 0 1 0 1 0 1 0 1 0 2 0 2 0 0	OVERBAN HOMES 2 3 0 0 2 2 2 0 2 0 2 2 2 2	K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 0 1 1 1 0 1 0 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 3	ROADS 0 1 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 2 0 2 0 2 0 2 0 2	OVERBAN HOMES 2 3 0 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 0 1 1 1 0 1 1 0 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 3	ROADS 0 1 0 1 0 1 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 3 3 4	OVERBAN HOMES 2 3 0 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 0 1 1 1 0 1 1 0 1 1 2	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV YARMUK, UPPER
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 3 2 2 3 3 3	O I 0 I 1 I 0 I	OVERBAN HOMES 2 3 0 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 0 1 1 1 0 1 1 2 1 2 1 2 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV YARMUK, UPPER YARMUK, LOWER
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	TRAVEL ROUTS	TRAVEL ROUTS 3	O I 0 I 1 2 0 I 0	OVERBAN HOMES 2 3 0 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	K FLOODING FIELDS-AGRI. 0 1 2 0 0 0 1 1 0 1 1 0 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV YARMUK, UPPER YARMUK, LOWER JURDAN, UPPER-SW
EXTREME FLOW >1:20 YR		ROADS		TRAVEL ROUTS 3	O I 0 I 1 2 0 I 0 I 0 I 0 I 0 I 0 I 0 I 0 I 0 I 0 I 0 I 0 I 0 I 0 I 0 I 0 I 2 I 2 I 2 I 2 I 2 I 2 I 2 I 2 I 2 I 2 I 1 I 1 I 1 I 1 I 1 I 1 I 1 I 1 I I I I	OVERBAN HOMES 2 3 0 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 0 1 1 1 0 1 1 2 1 2 1 1 2 1 1 0 1 1 0 1 1 0 1 1 0 0	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV YARMUK, UPPER YARMUK, LOWER JURDAN, UPPER-SW OR-COAH

	OVERBANK	ROADS	LOCATION & RISK LEVELS	ROADS	OVERBAN HOMES	K FLOODING FIELDS-AGRI.	SUB_BASIN NAME
		NOADO	Dr. 24 Biz Hvina Forecide 10.07.24 142	0	0	0	DAN
<1:5 fR			Rd 918, km.40.1	0	0	0	HERMON
+ - + + + + + + + + + + + + + + + + + +	- לבנון	+ -	Rd 918	0	0	0	JORDAN, UPPER-EAST
· ~ ~ ~ ~	· ACS	·		0	0	0	ORVIM
aline market			Rd.87 km10.73	0	0	0	MESHUSHIM
				0	0	0	YEHUDIA
				0	0	0	DLAYOT
מעלות דנ	A A A A A A A A A A A A A A A A A A A	The share of the		0	0	0	SFAMNUN
Sal and a card	Sand Jakan	Sal GREP	Rd.92 km20.8	0	0	0	KANEF
אראר ברמיאל	Contraction of the second	France States		0	0	0	SEMECH-ELAL
to us	Jana Lan	have been	Rd.92, km 9.3, 9.6	0	0	0	DGANIA-EIN GEV
בנרת שבי למורעאן	CELU CELU	בנרת בנרת		0	0	0	YARMUK, UPPER
The second	Star & Start	Sold and a second	Rd.808, km 13-13.8	0	0	0	YARMUK, LOWER
m 2 Contraction	22 Car	A Your	Rd. 90 km 411-412	0	0	0	JURDAN, UPPER-SW
Sen S - G	Cher Cher	Contra "	Rd-entrance to Almagor	0	0	0	OR-COAH
			Rd.87, km 4	0	0	0	KORAZIM
			LOCATION & RISK LEVELS	ROADS	OVERBANK HOMES	(FLOODING FIFL DS-AGRI	SUB BASIN NAME
			LOCATION & RISK LEVELS	ROADS	OVERBANK HOMES	FLOODING FIELDS-AGRI.	SUB_BASIN NAME
MEDIUM FLOW	OVERBANK	ROADS	Rd 918, km, 40,1	ROADS	OVERBANK HOMES 0	FIELDS-AGRI .	SUB_BASIN NAME DAN HERMON
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918	ROADS 0 1	OVERBANK HOMES 0 1 0	FIELDS-AGRI 0 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918	ROADS 0 1 1 0	OVERBANK HOMES 0 1 0 0	FIELDS-AGRI. 0 1 1 1 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd.87 km10.73	ROADS 0 1 1 0 1	OVERBANK HOMES 0 1 0 0 0	FIELDS-AGRI. 0 1 1 1 1 0	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd.87 km10.73	ROADS 0 1 0 0 1 0 1 0	OVERBANK HOMES 0 1 0 0 0 0 0	FIELDS-AGRI. 0 1 1 1 1 0 0 0	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd.87 km10.73	ROADS 0 1 0 0 1 0 0 0 0	OVERBANK HOMES 0 1 0 0 0 0 0 0 1	FIELDS-AGRI. 0 1 1 1 1 0 0 0 0 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd.87 km10.73	ROADS 0 1 0 0 1 0 0 0 0 0 0	OVERBANK HOMES 0 1 0 0 0 0 0 0 0 1 0	FIELDS-AGRI . 0 1 1 1 1 0 0 0 0 1 1 1 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd.87 km10.73 Rd.92 km20.8	ROADS 0 1 0 1 0 0 0 0 0 0 0 1 0 0 0 0 1 0 0 0 0 1 0 0 0 0 0 1 0	OVERBAN HOMES 0 1 0 0 0 0 0 0 1 0 1 0 1	FIELDS-AGRI . 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd.87 km10.73 Rd.92 km20.8	ROADS 0 1 0 1 0 0 1 0 0 0 0 0 0 1 0 0 0 0 0	OVERBAN HOMES 0 1 0 0 0 0 0 0 1 0 1 0 1 1	FIELDS-AGRI . 0 1 1 1 1 0 0 0 0 1 1 1 0 1 0 1 1 0 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd.87 km10.73 Rd.92 km20.8 Rd.92, km 9.3, 9.6	ROADS 0 1 0 1 0 0 0 0 0 0 1 0 0 1 0 1 0 0 1 1 0 1	OVERBANK HOMES 0 1 0 0 0 0 0 0 1 0 1 1 1 1 1	FLOODING FIELDS-AGRI. 0 1 1 1 0 0 0 1 1 1 0 0 1 1 0 1 1 1 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd.87 km10.73 Rd.92 km20.8 Rd.92, km 9.3, 9.6	ROADS 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OVERBAN HOMES 0 1 0 0 0 0 0 0 1 0 1 1 1 1 1 1	FLOODING FIELDS-AGRI. 0 1 1 1 0 0 0 1 1 1 0 1 0 1 1 1 1 1 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV YARMUK, UPPER
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	<section-header></section-header>	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd.87 km10.73 Rd.92 km20.8 Rd.92, km 9.3, 9.6 Rd.808, km 13-13.8	ROADS 0 1 1 0 1 0 0 1 0 0 0 0 0 1 0 0 1 0 1	OVERBAN HOMES 0 1 0 0 0 0 0 0 1 0 1 1 1 1 1 1 1 1	FLOODING FIELDS-AGRI. 0 1 1 1 0 0 0 1 1 0 1 1 0 1 1 1 1 1 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV YARMUK, UPPER YARMUK, LOWER
MEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	<section-header></section-header>	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd 918 Rd.87 km10.73 Rd.92 km20.8 Rd.92, km 9.3, 9.6 Rd.92, km 13-13.8 Rd.90 km 411-412	ROADS 0 1 0 0 0 0 0 0 0 0 0 0 1 0 0 1 0 0 1 0 0 1 1 0 1 1 0 1	OVERBANN HOMES 0 1 0 0 0 0 0 0 1 0 1 1 1 1 1 1 1 1 1	FIELDS-AGRI . 0 1 1 1 1 0 0 0 1 1 0 1 1 0 1 1 1 1 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV YARMUK, UPPER YARMUK, LOWER JURDAN, UPPER-SW
HEDIUM FLOW 1:5-10 YR	OVERBANK (HOMES)	<section-header></section-header>	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd.87 km10.73 Rd.92 km20.8 Rd.92, km 9.3, 9.6 Rd.808, km 13-13.8 Rd. 90 km 411-412 Rd-entrance to Almagor	ROADS 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OVERBAN HOMES 0 1 0 0 0 0 0 0 1 0 1 1 1 1 1 1 1 1 1	FLOODING FIELDS-AGRI. 0 1 1 1 0 0 0 1 1 0 1 1 0 1 1 1 1 1 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV YARMUK, UPPER YARMUK, LOWER JURDAN, UPPER-SW OR-COAH

HIGH FLOW	OVERBANK	ROADS		DOADS	OVERBAN	k flooding	
1.10-20 VR	(HOMES)		LUCATION & RISK LEVELS	RUADS	HOMES	FIELDS-AGRI.	SUB_BASIN NAME
1.10-20 TK				0	1	0	DAN
· ANT	A Barring S	1 2 35	Rd 918, km.40.1	1	2	1	HERMON
	A Corren	5	Rd 918	1	0	2	JORDAN, UPPER-EAST
		1 June 1		0	0	1	ORVIM
	1 Kall		Rd.87 km10.73	1	1	0	MESHUSHIM
		F Chr		0	1	0	YEHUDIA
J. J.		server and and		0	2	1	DLAYOT
				0	0	1	SFAMNUN
		International Action Control C	Rd.92 km20.8	1	1	0	KANEF
				0	1	1	SEMECH-ELAL
			Rd.92, km 9.3, 9.6	1	2	1	DGANIA-EIN GEV
				0	1	1	YARMUK, UPPER
The second secon			Rd.808, km 13-13.8	1	2	1	YARMUK, LOWER
The second second second second			Rd. 90 km 411-412	1	2	1	JURDAN, UPPER-SW
	Y Your	2 Strand	Rd-entrance to Almagor	1	1	0	OR-COAH
ser an	de la contra de la	- Con	Rd.87, km 4	1	1	0	KORAZIM
							-
				DOADS	OVERBAN	(FLOODING	
EXTREME FLOW	OVERBANK	ROADS	LOCATION & RISK LEVELS	ROADS	OVERBANH HOMES	(Flooding Fields-Agri.	SUB_BASIN NAME
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS	ROADS 0	OVERBANI HOMES 2	K FLOODING FIELDS-AGRI. 0	SUB_BASIN NAME
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1	ROADS 0 1	OVERBAN HOMES 2 3	K FLOODING FIELDS-AGRI. 0 1	SUB_BASIN NAME DAN HERMON
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918	ROADS 0 1 2	OVERBANK HOMES 2 3 0	K FLOODING FIELDS-AGRI. 0 1 2	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918	ROADS 0 1 2 0	OVERBANK HOMES 2 3 0 0	K FLOODING FIELDS-AGRI. 0 1 2 2	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd.87 km10.73	ROADS 0 1 2 0 1	OVERBANK HOMES 2 3 0 0 0 2	K FLOODING FIELDS-AGRI. 0 1 2 2 0	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd.87 km10.73	ROADS 0 1 2 0 0 1 0 1 0	OVERBANK HOMES 2 3 0 0 0 2 2 2	K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 0	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd.87 km10.73	ROADS 0 1 2 0 1 0 1 0 1 0 0 0 0 0 0	OVERBAN HOMES 2 3 0 0 0 2 2 2 2	K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 0 0 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd.87 km10.73	ROADS 0 1 2 0 1 0 1 0 1 1	OVERBAN HOMES 2 3 0 0 0 2 2 2 2 2 0	K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 0 1 1 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd.87 km10.73 Rd.87 km10.73 Rd.92 km20.8	ROADS 0 1 2 0 1 0 1 0 1 0 0 0 0 0 0 2	OVERBAN HOMES 2 3 0 0 0 2 2 2 2 0 2 0 2	K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 0 1 1 1 0	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd.87 km10.73 Rd.92 km20.8	ROADS 0 1 2 0 1 0 1 0 1 0 0 0 0	OVERBAN HOMES 2 3 0 0 0 2 2 2 2 0 2 2 2 2 2 2 2 2 2 2	K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 0 0 1 1 1 0 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd.918 Rd.87 km10.73 Rd.87 km10.73 Rd.92 km20.8 Rd.92, km 9.3, 9.6	ROADS 0 1 2 0 1 0 1 0 1 0 1 0 1 0 1 0 0 0 0 0 0 0 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 2 2 2 2 2 2 2 2 3 3 3 4 5 <td>OVERBANK HOMES 2 3 0 0 2 2 2 2 2 0 2 2 2 2 2 2 2 2 2 2</td> <td>K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 0 1 1 1 0 1 1 0</td> <td>SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV</td>	OVERBANK HOMES 2 3 0 0 2 2 2 2 2 0 2 2 2 2 2 2 2 2 2 2	K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 0 1 1 1 0 1 1 0	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd 918 Rd.87 km10.73 Rd.87 km10.73 Rd.92 km20.8 Rd.92, km 9.3, 9.6	ROADS 0 1 2 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 0 0 0 0 0 0 0 0 0 0 <tbr> <tbr></tbr> <tbr></tbr> <tbr></tbr> <</tbr>	OVERBAN HOMES 2 3 0 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 1 1 1 0 1 1 0 1 1 2 2	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV YARMUK, UPPER
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd 918 Rd.87 km10.73 Rd.92 km20.8 Rd.92, km 9.3, 9.6 Rd.92, km 9.3, 9.6	ROADS 0 1 2 0 1 0 1 0 1 0 1 0 1 0 0 0 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 3 3 4 <tbr> <tbr></tbr> <tbr></tbr> <tbr></tbr> <</tbr>	OVERBAN HOMES 2 3 0 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 0 1 1 1 0 1 1 2 1 2 1 2 1	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV YARMUK, UPPER YARMUK, LOWER
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd 918 Rd.87 km10.73 Rd.87 km10.73 Rd.92 km20.8 Rd.92, km 9.3, 9.6 Rd.92, km 9.3, 9.6	ROADS 0 1 2 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	OVERBAN HOMES 2 3 0 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 0 1 1 1 0 1 1 2 1 2 1 1 2 1 1 2	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV YARMUK, UPPER YARMUK, LOWER JURDAN, UPPER-SW
EXTREME FLOW >1:20 YR	OVERBANK (HOMES)	ROADS	LOCATION & RISK LEVELS Rd 918, km.40.1 Rd 918 Rd 918 Rd.87 km10.73 Rd.87 km10.73 Rd.92 km20.8 Rd.92 km20.8 Rd.92, km 9.3, 9.6 Rd.90 km 13-13.8 Rd. 90 km 411-412 Rd-entrance to Almagor	ROADS 0 1 2 0 1 0 1 0 1 0 0 0 0 0 0 0 2 0 2 0 2 0 2 3 3 4 <t< td=""><td>OVERBAN HOMES 2 3 0 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2</td><td>K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 1 1 1 0 1 1 0 1 1 2 1 1 2 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 0</td><td>SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV YARMUK, UPPER YARMUK, LOWER JURDAN, UPPER-SW OR-COAH</td></t<>	OVERBAN HOMES 2 3 0 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	K FLOODING FIELDS-AGRI. 0 1 2 2 0 0 1 1 1 0 1 1 0 1 1 2 1 1 2 1 1 0 1 1 0 1 1 0 1 1 0 1 1 0 1 0	SUB_BASIN NAME DAN HERMON JORDAN, UPPER-EAST ORVIM MESHUSHIM YEHUDIA DLAYOT SFAMNUN KANEF SEMECH-ELAL DGANIA-EIN GEV YARMUK, UPPER YARMUK, LOWER JURDAN, UPPER-SW OR-COAH

automatic indications for flow will raise specific alerts for logged flooding points

decision supporting layers



WEBSITE FOR CLIENTS



WEBSITE FOR CLIENTS – 96H EARLY ALERT

😹 😪 🕢 🗤 малгія 🥠			מכ"ם ולווין עב	תחזית שיטפונות∙ Home	המרכז הלאומי לחיזוי שיטפונות
Forecast: the next few days		ייים של מחר (רביעי) צפויים ך לשיטפונות בדגש על נחלי שעות הצהרים.משלב זה וכן		מבזקים ועידכונים Bulletins and מבזק אורה ש updates during מבזק אורה של ערפיל an event מבזק אורה של ערפיל	
בת 23/9 ראשון 24/9	<u>ب</u> س	4 <mark>8</mark> - שישי 22/9	חמישי 21/9	today ר	שלישי 19/9
21:00 - 6 03:00 סוילים גחלים עירוני	 5:00 - 15:00 - נחלים עירוני 	 ליב עירוני לים עירוני 	- 03:00 -	ین ۵۶:00 کدرون میریز Da	תחזית לפי שעות אין צפי לשיטפונות aily Forecast
	Flow Forecast	משמעויות	צפי הצפות ניקוז	צפי זרימות	03:00 - 09:00 22/09/2023 שישי, איזור צפי גשם
URBAN FLUVIAL TRAVELS ROADS 03:00 - 09:00 22/09/2023 שישי,					

יום שני 11/9	יום ראשון 10/9		רו <mark>4:0</mark> יום שישי 8/9	7/91 today	יום רביעי 6/9
21:00 - 03:00 To be updated within 24H	15:00 - 21:00 To be updated within 24H	09:00 - 15:00	03:00 - 09:00	במרבית אזורי הארץ. לא צפויים שטפונות רוצי נחלים בהם ירדו גשמים ביום ב',	תחזית עד הצהרים יתכן גשם מקומי, לרוב קל, ו חדשים, אך עדיין קיים סיכוי לזרימות בע



			For the second state of th
Areas	Rainfall forecast	Flow Forecast	Possible Impacts
North and center	Local rainfalls * decreasing	none	
East and South	Local rainfalls * decreasing	High chance forflash floodsJudean desert,Negev and Arava	 Road blocks Danger for hikers -narrow valleys

יום שבת, 03:00 - 09:00 09/09/2023 יום שבת,

36-48H: DETAILED FORCASTS



FOCUS FORCES IN TIME, SPACE AND RESOURCES

EFAS:

Forecasts Overview \checkmark

Forecast Type	1	2	3	4	5	6	7	8	9	10
DWD-DET		Ŷ	*	Ļ	Ļ	Ļ	Ļ			
ECMWF-DET		î	*	Ļ	Ļ	Ļ	Ļ	Ļ	Ļ	Ļ
ECMWF-ENS > 5 yr RP			80	10						
ECMWF-ENS > 20 yr RP			2							
COSMO-LEPS > 5 yr RP		35	100	95	10	5				
COSMO-LEPS > 20 yr RP			95							

FOCUS FORCES IN TIME, SPACE AND RESOURCES

EFAS EXAMPLE:

Forecasts Overview \wedge

Forecast Type	1	2	3	4
DWD-DET		î	*	Ļ
ECMWF-DET		î	*	Ļ
ECMWF-ENS > 5 yr RP			80	10
ECMWF-ENS > 20 yr RP			2	
COSMO-LEPS > 5 yr RP		35	100	95
COSMO-LEPS > 20 yr RP			95	

ECMWF-ENS > 5 yr RP \land

Forecast Day	28	29							
2020-09-28 00:00					4	8			
2020-09-28 12:00				6	43	6			
2020-09-29 00:00					2	4			
2020-09-29 12:00				2	69				
2020-09-30 00:00					57	4			
2020-09-30 12:00					73				
2020-10-01 00:00					80	10			

ECMWF-ENS > 20 yr RP 🔨

Forecast Day	28	29	30	1	2	3	4	5	6	7	8	9	10
2020-09-28 00:00						2	2						
2020-09-28 12:00						10							
2020-09-29 00:00													
2020-09-29 12:00						16							
2020-09-30 00:00													
2020-09-30 12:00						6							
2020-10-01 00:00						2							

FOCUS FORCES IN TIME, SPACE AND RESOURCES



ALLOW FOR NATIONAL OVER VIEW



ALLOW FOR NATIONAL OVER VIEW



MOBILE DISPLAY FORECASTS AND NOW CASTING BULLETINS

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ĵ.	V 0	ים ראשיי	רצי- אזור	N		ובים	תחזית לימים הקו			
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	הצפות		נחלים		ישים (ςς	סיולים 🔴			
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02:00	20:00 14:	00 08:0	02:00	20:00	14:00	08:00	אזור			
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							חדרה- אלכסנדר			
							חדרה- אלכסנדר ים המלח- צפון			
							חדרה- אלכסנדר ים המלח- צפון ים המלח- צפון			
							חדרה- אלכסנדר ים המלח- צפון ים המלח- צפון חדרה- אלכסנדר			
							חדרה- אלכסנדר ים המלח- צפון ים המלח- צפון חדרה- אלכסנדר ים המלח- צפון			
							חדרה- אלכסנדר ים המלח- צפון ים המלח- צפון חדרה- אלכסנדר ים המלח- צפון ים המלח- צפון			
							חדרה- אלכסנדר ים המלח- צפון ים המלח- צפון חדרה- אלכסנדר ים המלח- צפון ים המלח- צפון חדרה- אלכסנדר			
							חדרה- אלכסנדר ים המלח- צפון ים המלח- צפון חדרה- אלכסנדר ים המלח- צפון ים המלח- צפון חדרה- אלכסנדר ים המלח- צפון			
							חדרה- אלכסנדר ים המלח- צפון ים המלח- צפון חדרה- אלכסנדר ים המלח- צפון חדרה- אלכסנדר ים המלח- צפון ים המלח- צפון			
							חדרה- אלכסנדר ים המלח- צפון ים המלח- צפון חדרה- אלכסנדר ים המלח- צפון חדרה- אלכסנדר ים המלח- צפון ים המלח- צפון ים המלח- צפון			
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							חדרה- אלכסנדר ים המלח- צפון חים המלח- צפון ים המלח- צפון ים המלח- צפון ים המלח- צפון ים המלח- צפון חדרה- אלכסנדר ים המלח- צפון ים המלח- צפון			

FOCUS ON THE AREA OF INTERSET



02:00	20:00	14:00	08:00	02:00	20:00	14:00	08:00	אזור	
								חדרה- אלכסנדר	
								ים המלח- צפון	
								ים המלח- צפון	
								דרה- אלכסנדר	
								ים המלח- צפון	
								ים המלח- צפון	
								חדרה- אלכסנדר	
								ים המלח- צפון	
								ים המלח- צפון	
								חדרה- אלכסנדר	
								ים המלח- צפון	
								ים המלח- צפון	
								חדרה- אלכסנדר	
גליל עליון מע גליל גולן גליל מערבי									



תחזית ל-48 שעות נערכה לאחרונה בתאריך 08/04/2023 בשעה 12:01

אזהרות: כבישים

URBAN Flow FLUVIAL TRAVELS ROADS

ו FLUVIAL TRAVELS ROADS 14:00-20:00 9.4 ראשון



	שלישי 11.4			שני 10.4					9.4 ראשון
08:00	02:00	20:00	14:00	08:00	02:00	20:00	14:00	08:00	02:00
									גולן-כינרת
									גליל מזרחי
									גליל מערבי
									קישון
									עמקי המזרח
		[כרמל י
									חדרה-אלכסנדר
									דליה-תנינים
									ירקון-איילון
									לכיש-שורק
									בשור-שיקמה
									הבקעה
									צַפַּ' ים המלח
									דר' ים המלח
									הנגב המערבי
									מכתשים וערבה צֵפֶ'
									פארן
									חיון
									הרי אילת-ערבה דר'
	RISK LI	EVEL:	NO WARNINGS	S	REGULAR WARNING	D	ANGER	EXT	REME

תחזית ל-48 שעות נערכה לאחרונה בתאריך 08/04/2023 בשעה 12:01

FLUVIAL TRAVELS ROADS

דעני 14:00-20:00 10.4 שני

URBAN



אזהרות: כבישים

	שלישי 11.4								9.4 ראשון
8:00	02:00	20:00	14:00	08:00	02:00	20:00	14:00	08:00	02:00
									גולן-כינרת
									גליל מזרחי
									גליל מערבי
									קישון
									עמקי המזרח
									כרמל
									חדרה-אלכסנדר
									דליה-תנינים
									ירקון-איילון
									לכיש-שורק
									בשור-שיקמה
									הבקעה
									צֵפֵ' ים המלח
									דר' ים המלח
									הנגב המערבי
									מכתשים וערבה איי
									פארן
									חיון
									הרי אילת-ערבה דר'
RISK LEVEL:		NO WARNIN	GS	WARNING	č	DANGER	EX DA	NGER	

Discussion

WE FACTOR FORECASTE PROBABILITY IN THE RISK LEVEL – Should we separate to risk level and chance? How should we communicate flow probability?

URBAN FLOODING :

Can we separate pluvial from fluvial?

Creating new categories and risk rules specifically for urban flooding

FEEDBACK AND UPDATING SYSTEM – ENGAGE OUR CLIENTS WHILE MAINTAINING INTEGRITY

CAN THIS METHOD BE EFFECTIVE FOR OTHERS?

Create a platform allowing agencies to share data and to create their own categories and risk-rules.

CMMUNICATING RISKS EFFECTIVELY

- RAISE EARLY WARNING
- DISPLAY FORECASTS WITH MAPS AND SHORT TEXT
- CREATE FOCUS WITH CATEGORIZED RISK MAPS
- RISK MAPS HELP OVERCOMING INCONSISTENCIES AND UNCERTAINTIES OF WEATHER FORECASTS
- ALLOW NAVIGATION BETWEEN THE MAPS
- SHOW WHERE RISK IS UNLIKELY
- SHOW TIME PROGRESSION OF THE LOCALITY OF THE RISKS
- SHOULD BE DONE AS COOPERATION WITH RISK MANAGEMENT OR DRAINAGE AUTHORITIES.
- GET FEEDBACK FROM CLIENTS ON WHAT THEY NEED TO KNOW AND HOW TO GET THAT FROM THE FORECAST

ISRAEL FLOOD FORECAST CENTER

Special thanks to Yair Rinat

And to our website development team in the meteorological institute: Rani Naor, Nurit Meir, Lihi Chalphine, Dana Tal, Boris Zaslavskiy and Ronit Kosoy

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Collaborators: National Security Council Israel drainage authorities Federation of Local Authorities in Israel



Israel's police National Fire and Rescue Authority National Emergency Management Authority

Federation of Local Authorities in Israel

