

מדינת ישראל

משרדי הממשלה

משרד

מס' תיק

חטיבה: משרד האנרגיה והמים
תת חטיבה: משרד התשתיות הלאומיות- רשות המים
שם תיק: ארצות שכנות - ארצות ערב
1991-1981 תקופת החומר: 30/01/2013
סימול מקורי: 50286 / 8 - גל
מזהה פיזי:

מס' תיק מקורי

שם: ארצות שכנות - ארצות ערב
50286 / 8 - גל
מזהה פיזי: 2215629
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30/10/2013
30/01/2013
02-109-04-12-05

מחלקה

5/1/20
K.C.

ירוק, חברה מים בע"מ

מיועד להתכתבות בכתבייד

אל:	בן זלצמן	סימננו:
מאת:	טיקויל	תאריך:

הנדון: הפטור לזכות בוטאק על אסוף בקרן

כך בנוי מדגם זלמן קטן מתוך
מאגר טבלאות במלן SCIENCE, המצבי על
צמח.

אני מתכוון להמשיך את המחקר המצבי על
לואונו אמן במחקר

לואונו

י. בואן
המח: י. זכר
אני ו/ו

המח: י. זכר
י. בואן
אני ו/ו

Cloud Seeding: One Success in 35 Years

After three decades of promise and disappointment, weather-modification researchers are learning that there are no easy shortcuts

It all started on a hot July day in 1946 in one of those new home freezing units. In his laboratory at the General Electric Company, Vincent Schaefer serendipitously discovered that a bit of Dry Ice could create a virtual snowstorm in a freezer that until then had contained only a fog of cold water. If it worked in a freezer, many reasoned, it should work in clouds to tame storms and make rain.

In what must have been the most audacious scaling up of a laboratory experiment ever attempted, a group of government and private researchers performed the home freezer experiment little more than a year later on a full-fledged hurricane east of Jacksonville, Florida. The storm promptly changed course (probably of its own accord) and smashed into Savannah, Georgia.

The same hard lesson has been repeated many times since: do not fool with something you do not understand. The hazard for researchers during the past 35 years has not been so much the weather itself as their repeated failures to prove early claims that they could change the weather. Clearing airports of cold fog proved to be easy enough, but proof of the ability to increase rain or snow eluded researchers for 30 years. Today, only a single set of experiments, which were conducted in Israel, appears to have confirmed an increase in precipitation after cloud seeding. The results of a few other experiments seem encouraging but hardly convincing. Both the one apparent success and the failures demonstrate that weather-modification experiments require statistical rigor as well as some idea of how clouds work if researchers are to overcome the confounding natural variability of the weather.

"The Israeli experiment," says Roscoe Braham, a meteorologist at the University of Chicago, "is the only experiment that has consistently proved to have yielded increases in rain at the ground; no other project has shown consistent results." The first of two Israeli weather modification experiments ran from 1961 to 1967 under the direction of three researchers from the Hebrew University of Jerusalem—Abraham Gagin, Jehuda Neumann, and Ruben Gabriel, who is now at the University of Roches-

ter. They wanted to determine whether seeding wintertime clouds with fine particles of silver iodide would increase rainfall over northern Israel. They assumed that many Israeli clouds could yield more rain if silver iodide were added to them to promote the formation of ice particles from water droplets cooled below the freezing point, the first step in the precipitation process. The Israeli I experiment appeared to have succeeded. Rainfall, according to a number of independent analyses, increased about 15 percent in the target areas after cloud seeding. That is a respectable amount in rainmaking circles.

In fact, the Israeli researchers were even more successful than the reported analyses suggested. The project had a quiet start, Gabriel recalls, for fear that word of their work would leak out to less than friendly Arab neighbors downwind of the seeding target areas. If more rain fell on Israel, would less fall on Jordan? Apparently not. Glenn Brier, Louis Grant, and Paul Mielke of Colorado State University (CSU) analyzed rainfall records from Lebanon, Syria, and Jordan available through routine international data exchanges. They did find downwind seeding effects outside of Israel's borders, but the effects were rainfall increases of perhaps 20 to 30 percent; they found no evidence of any decreases.

The primary purpose of the second, 1969-1975 Israeli experiment was to see if seeding would enhance rainfall over the drainage system that supplies water to the Sea of Galilee (also known as Lake Kinneret). The Israelis captured about half of this catchment area, including the Golan Heights, during the 1967 war. As it turned out, Israeli II also served as a confirmatory experiment: that is, one in which specific hypotheses are tested and a strict design is adhered to throughout in order to confirm an apparent effect of a preceding, exploratory experiment. Only in the late 1970's did the concepts of exploratory and confirmatory experiments become formally accepted among weather-modification researchers, and then only at the insistence of statisticians (*Science*, 24 November 1978, p. 860).

The strict design of Israeli II, plus some luck at having such cooperative

clouds, seems to have paid off. According to recent analyses by the experimenters (1), precipitation increased 13 percent in the target area as a whole and 18 percent in the smaller catchment area. The probability that the increase resulted from a chance distribution of particularly rainy days was 2.8 percent for the whole target area and 1.7 percent for the catchment area. That compares with the approximate significance level of 40 percent for the recently analyzed Florida Area Cumulus Experiment (FACE-2), an unsuccessful attempt to confirm FACE-1 (*Science*, 16 July, p. 234). The significance level could only be lowered to 13 percent by dropping a day of heavy rainfall without seeding, which would have been a violation of the rules of a confirmatory experiment.

Israeli II seems to have avoided such statistical problems, in part by accumulating 383 experimental days (days on which a random decision to seed or not to seed would be made) compared with FACE-2's 51 days. Having such a small sample, FACE-2 experimenters tried to minimize the impact of naturally rainy days by predicting and eliminating them before the designation of experimental days. Among other problems, one such day slipped through. The Israeli experimenters could afford the luxury of rejecting only days obviously lacking suitable clouds; their large sample would not be greatly influenced by a few particularly rainy days, they reasoned. They could also compare the rainfall in the target area with natural rainfall on the same day in a control area upwind of the seeding area. This allowed them to account for all but one-third of the random natural variability in the target area, according to Gabriel. In the FACE target area of south Florida, the summer rain is too spotty to allow the use of a control area, he believes.

The Israeli II data must still be reanalyzed by other statisticians, but most researchers are also impressed that the results make so much physical sense. The clouds that Gagin and Neuman hypothesized would be most susceptible to seeding did indeed produce the most additional rain after seeding. They reasoned that, because silver iodide is not



אל:	בן זלמן בן זלמן	סימנו:
מאת:	ש. קולט	תאריך:

17/12/01

הנדון: הפסקת זכויות בוטראף מלשואם בוכין
 כ"ה ינוני הוציאו חוקר קטע מתוך
 מאמר שפורסם במגזין SCIENCE, המדבר על
 ז'מא.

אלו המפרסם את המאמר המדובר
 לא ידעו את המפרסם

לוחית

ב. גמאל
 המע: י. בכר
 אלו ו/ו

הערך: יאסר עבד אל כר
 ב. זלמן זלמן
 ש' הוציאו

1950

July 1st

1950

Dear Mr. [Name]

I have received your letter of the 25th and am glad to hear from you. I am sorry that I cannot give you a more definite answer at this time.

I will try to get back to you as soon as possible. Thank you very much for your interest.

Sincerely,
[Name]

[Signature]

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After three decades of promise and disappointment, weather-modification researchers are learning that there are no easy shortcuts

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ירדן

מד: 031291/848/0028

מקור: אלראי, ירדן

תזפ: 080991

הנדון: 06 ירדן-מים/ נתונים על תצרוכת המים בירדן בשנים 1989-1990

97 אחוזים מתושבי ירדן נהנים משימוש ברשתות המים הציבוריות. ממקורות רשות המים נמסר, כי תפוקת המים לתצרוכת אזרחית ותעשייתית בשנת 1990 היתה 178 מליון מ"ק, המהווים גידול של חמישה אחוז בהשוואה לשנת 1989. /ב.ע שמעון

מד: 031291/848/0029

מקור: אלראי, ירדן

תזפ: 080991

הנדון: 07 ירדן-מים/סקירה על התכניות ועבודות הפתוח והתחזוקה במשק המים בירדן

רשות המים מבצעת עבודות בינוי, שיפוץ ותחזוקה בכמה סכרים, חופרת מאגרים באזורים מדברים, בונה בריכות, מפתחת מעיינות ומדפנת תעלות השקיה במחוזות השונים.

צוותים מקצועיים מטעם הרשות פיתחו 17 מעיינות באזורים שונים בממלכה ובפיתוח, תחזוקה והרחבה של מספר סכרים. הורחבו סכר אבו טואנה באלחלאבאת אלשרקיה בקיבולת אגירה של 250 אלף מ"ר, סכר אלבו יצה ברמת'א בקיבולת 500 אלף מ"ר, סכר אלסלטאני באלכרכ שעבר עבודות הסרת משקע סחף בקיבולת 65 אלף מ"ר.

נמשכות העבודות בסכר ואדי אלג'נאב באזור אלמשאש, בקיבולת 100 אלף מ"ר וחפירת מאגר אלמוקר המזרחי בקיבולת כ-20 אלף מ"ר, זאת בנוסף לשישה מאגרים באלמווקר בקיבולת כ-60 אלף מ"ר. כמו כן, דופנו תעלות השקיה באזורים שונים באורך כולל של 65 ק"מ. /ב-ע. שמעון

High Pass



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אפרים לפיד
ספקד גלי צהל

Handwritten text: 322 7410

Handwritten text: קבר שניאן

27 NOV 1991



מד: 221191/848/1052

מקור: אלראי, ירדן

תזפ: 051191

הנדון: 03 ישראל-ערב-מיים/מאמר מאת מומחה לענייני מיים המונה את הפעולות
שעל הערבים לנקוט להבטחת זכויות המיים שלהם

כתב המהנדס ד"ר אסאמה אלמדלל (מומחה לענייני מיים): בידי הארצות הערביות
במזה"ת האפשרויות הבאות למילוי צורכי המיים שלהן:

1. לעמוד בתוקף נגד השאיפות הישראליות למיים ערביים, בין אם אלה מימי נהרות
הירדן והירמוך ובין אם אלה מי התהום.

2. להתעקש על השבת זכויות המיים הגזולות של הערבים, תוך הסתמכות על הסכמים
אזוריים קיימים, אשר קבעו מכסת מיים לכל מדינה באזור. כמו כן יש לשכנע
את הזרמת המיים, על פי המצב הפוליטי ולפי שיקולים אופורטוניסטיים, וכן
יאפשרו למיים לזרום לסוריה ולעראק במסגרת ההקצבות שעליהן הוסכם בין שלוש
המדינות.

3. לעורר את הכרת העמים בזכויותיהם ולפעול לפרסומן, ולהקדיש להן את תשומת
הלב הראויה.

4. ליצור אווירה בקרב הערביים, שתביא לקביעת מדיניות ותוכניות פיתוח בתחום
המיים במסגרת אסטרטגיה ערבית קונסטרוקטיבית, שתרחק מהאירועים הפוליטיים
ומהסכסוכים. זאת יש לעשות בתאום מלא בין המדינות היכולות לתת מיים לבין
כאלה הזקוקות להם, ולפעול על מנת להפוך תוכניות אלה למנוף למען רווחת
הדורות הבאים.

5. על המשלחות הערביות לשתף פעולה בכל ועידה לענייני מיים (כגון זו העתידה
להתקיים בתורכיה בקרוב), בתנאי שהן יבואו מוכנות, מצויידות במספרים
ובנתונים מדעיים וחוקיים, כך שניתן יהיה לנצל כל הזדמנות להגיע להסכם
בינ"ל, שאותו יהיה קשה לשנות בעתיד.

6. להתייצב כנגד המחשב של ממשלת תורכיה להקים קו צנור מיים בשרות השלום,
בטרם יובטחו מלוא זכויות המיים של סוריה ועראק.
בתוכנית התורכית הזו יש משום שלילת זכויות המיים שלנו בצפון האומה
הערבית במידה רבה עוד יותר מאשר עושה ישראל.

ל. יוסי

25/11/20



מד: 221191/848/1053

מקור: אלאנואר, לבנון

תזפ: 101191

הנדון: 04 ישראל-לבנון-ערב-מים/עבד אלאמיר קבלאן, אומר כי נושא המים של לבנון אינו עומד לדיון במסגרת התהליך המדיני

המפתי השיעי של לבנון עבד אלאמיר קבלאן אומר את הדברים הבאים בראיון ליומון "אלאנואר".

ש': האם נושא ניצול המים של לבנון ע"י ישראל ידון בוועידת השלום?

ת': נושא מקורות המים אינו קשור לתהליך השלום ולכן אין צורך לדון בו. השיחות צריכות להתמקד בנסיגה ישראלית ללא תנאי מדרום לבנון, כאשר אם היא לא תעשה זאת - תמשך ההתנגדות לכיבוש.

1/. יהל