Severe Weather Episode in Idaho on May 31, 1997

Several tornadoes and severe thunderstorms were located in and around Idaho Saturday, May 31, 1997. This small report will briefly describe atmospheric conditions just prior and during the severe weather outbreak. It will also serve as a partial record for future reference of some of the major model features that were involved in the episode (see attachments).

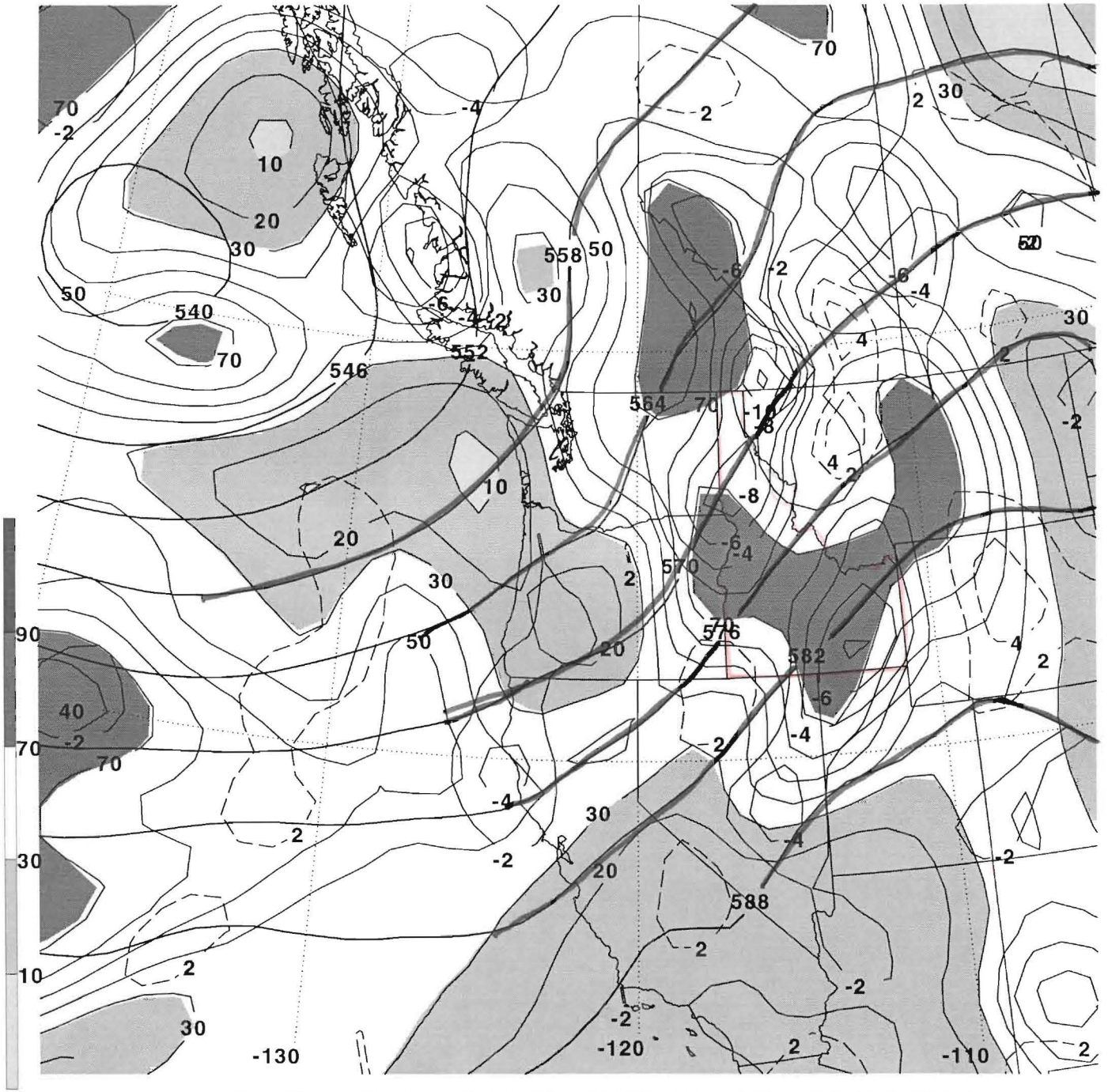
A negative tilt mean H5 upper trough was located around 135w. The downstream upper ridge was located over Montana and Wyoming. Idaho was located in moist diffluent mid and upper level flow. The air mass was unstable across all of Idaho except the extreme southwest corner. Two instability maxes could be found in vicinity of LWS and near PIH and IDA. The 850 MB thermal ridge and 1000-500MB thickness ridge axes were located near the WY/ID border. An H5 vorticity min axis was over southeast Idaho. A well defined VV max area (+6) could be found over southeast Idaho. A surface thermal low was located near SLC with the trough axis northward through PIH and IDA. Pocatello reached a record 90 degrees during the afternoon. A cold front was located in central WA/OR during the early morning. It was moving east and reached Boise at 6 pm MDT. The morning hodograph for Boise revealed excellent shear and veering winds - a good precursor for supercell development. Not seen on the included charts or by the models was a shortwave trough that moved north from NV early Saturday morning and caused thunderstorms in southwest Idaho just before sunrise. This shortwave had a west to east orientation and moved across southeast Idaho late Saturday morning.

4KM water vapor and IR imagery identified the short wave moving north across southern Idaho real well. This wave and its associated "ripples" were believed to be the severe trigger in the southeast and elsewhere late morning through evening. Imagery (not included) was so impressive with this feature that I believe the events that unfolded could not have occurred without it.

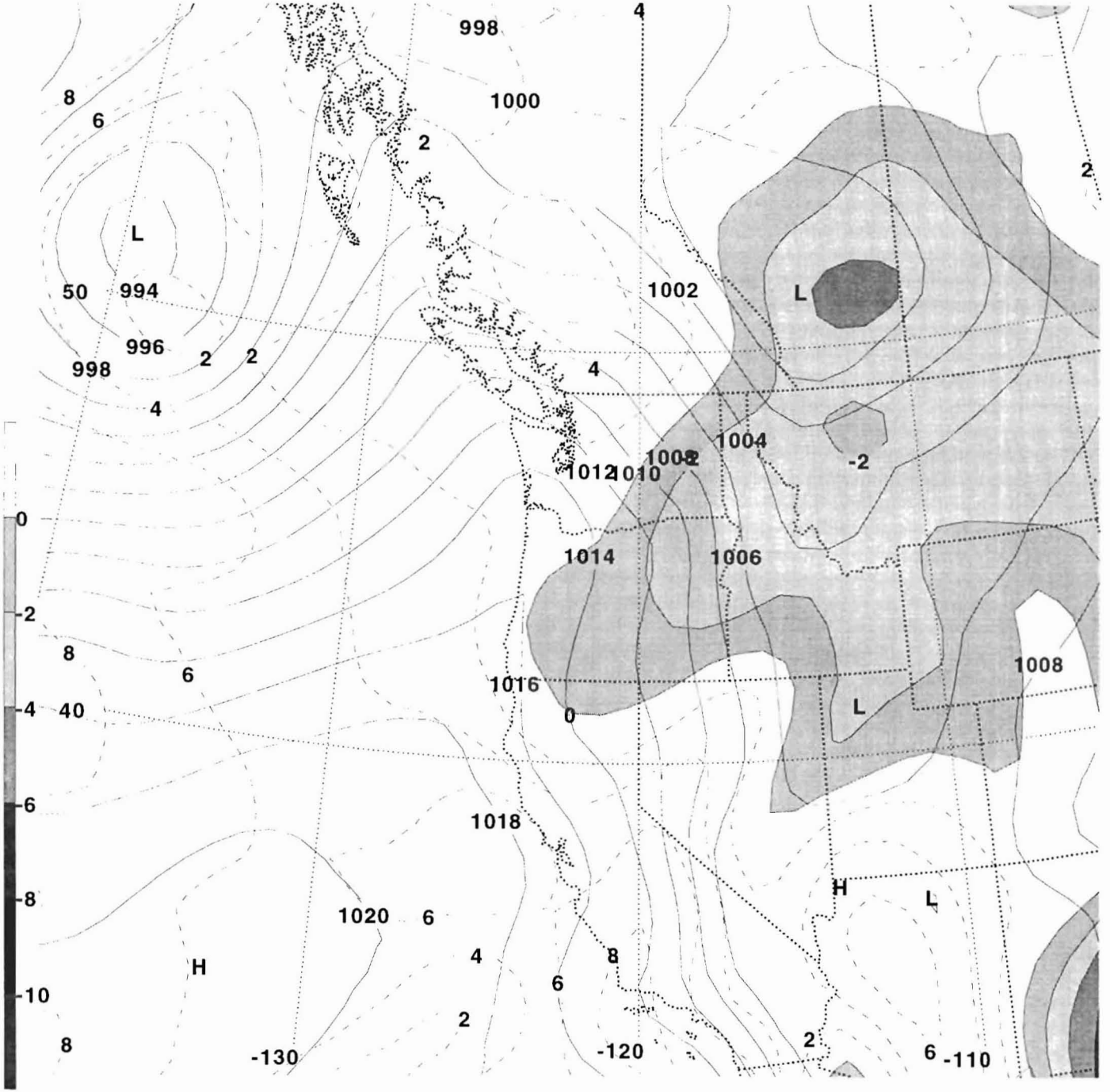
Southeast Idaho experienced at least 3 tornadoes and several severe thunderstorms. Southwest Idaho had two severe thunderstorms. Northern Idaho and nearby Eastern WA/OR had several reports of funnel clouds and numerous severe thunderstorms. SELS had Tornado and Severe thunderstorm watches covering eastern WA/OR and all of Idaho.

Though the large scale antecedent conditions were ripe for significant thunderstorm activity, I believe it was the smaller scale that delivered the punch that lead to the severe outbreak. Namely, the small shortwave trough moving northward into Idaho from Nevada. The attachments should attest to the ripe environment. Unfortunately, my recollection will have to suffice for the shortwave trigger from NV seen only on imagery. The storm report from PIH is also included.

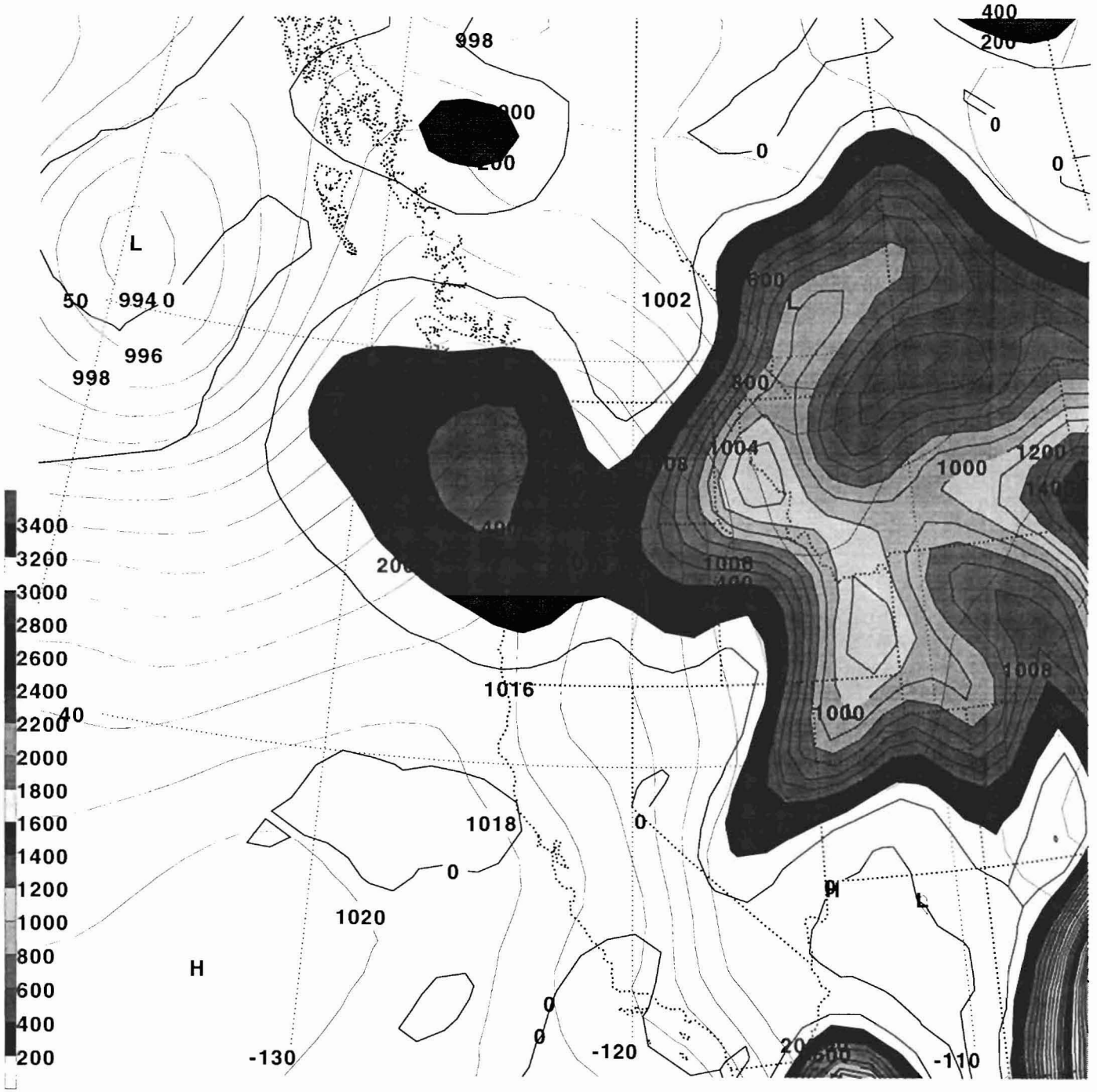
NWSFO Boise/te



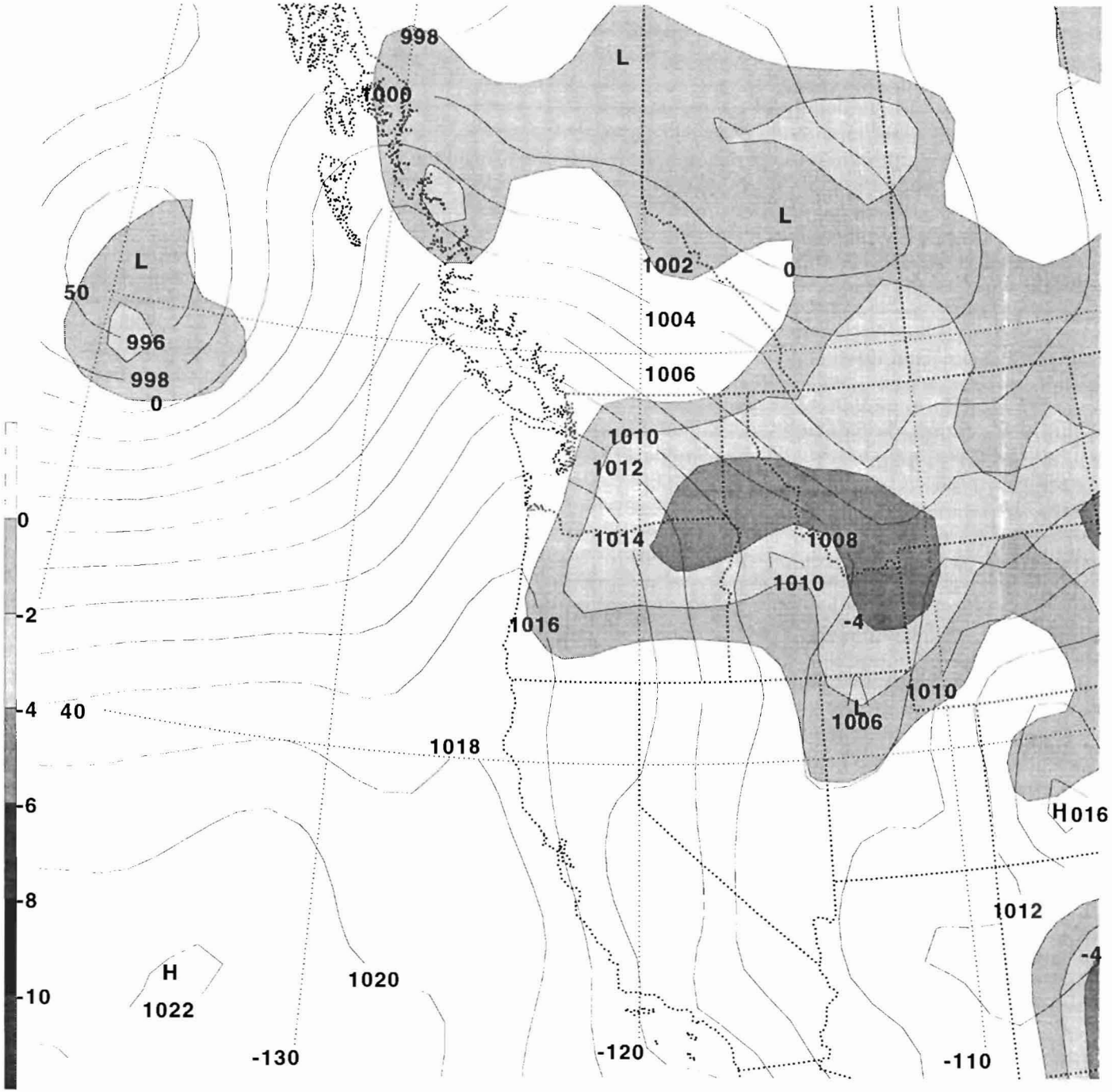
ETA 970601/0000V000 500 MB HGHTS, REL HUMIDITY AND OMEGA



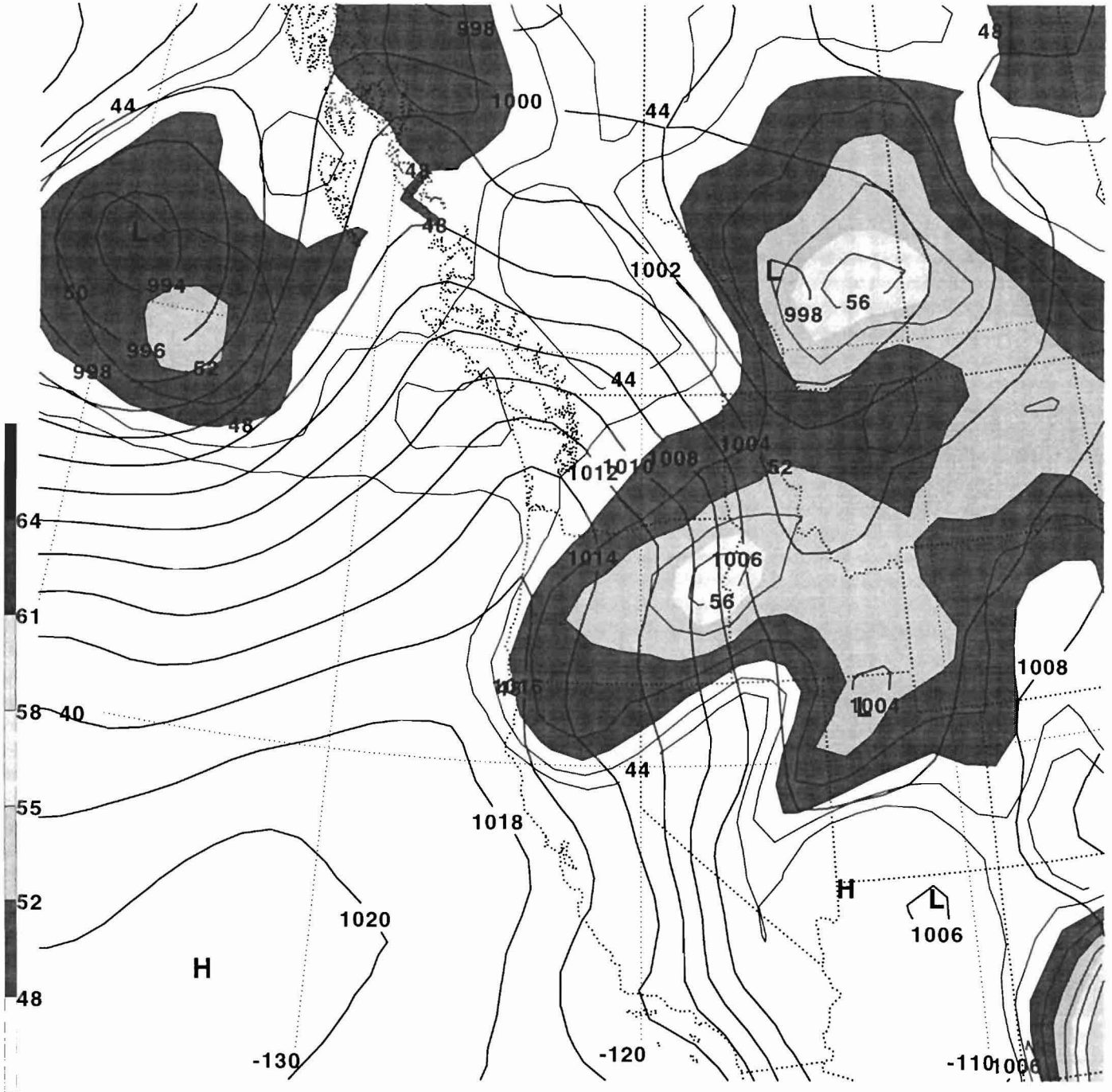
ETA 970601/0000V000 LIFTED INDEX



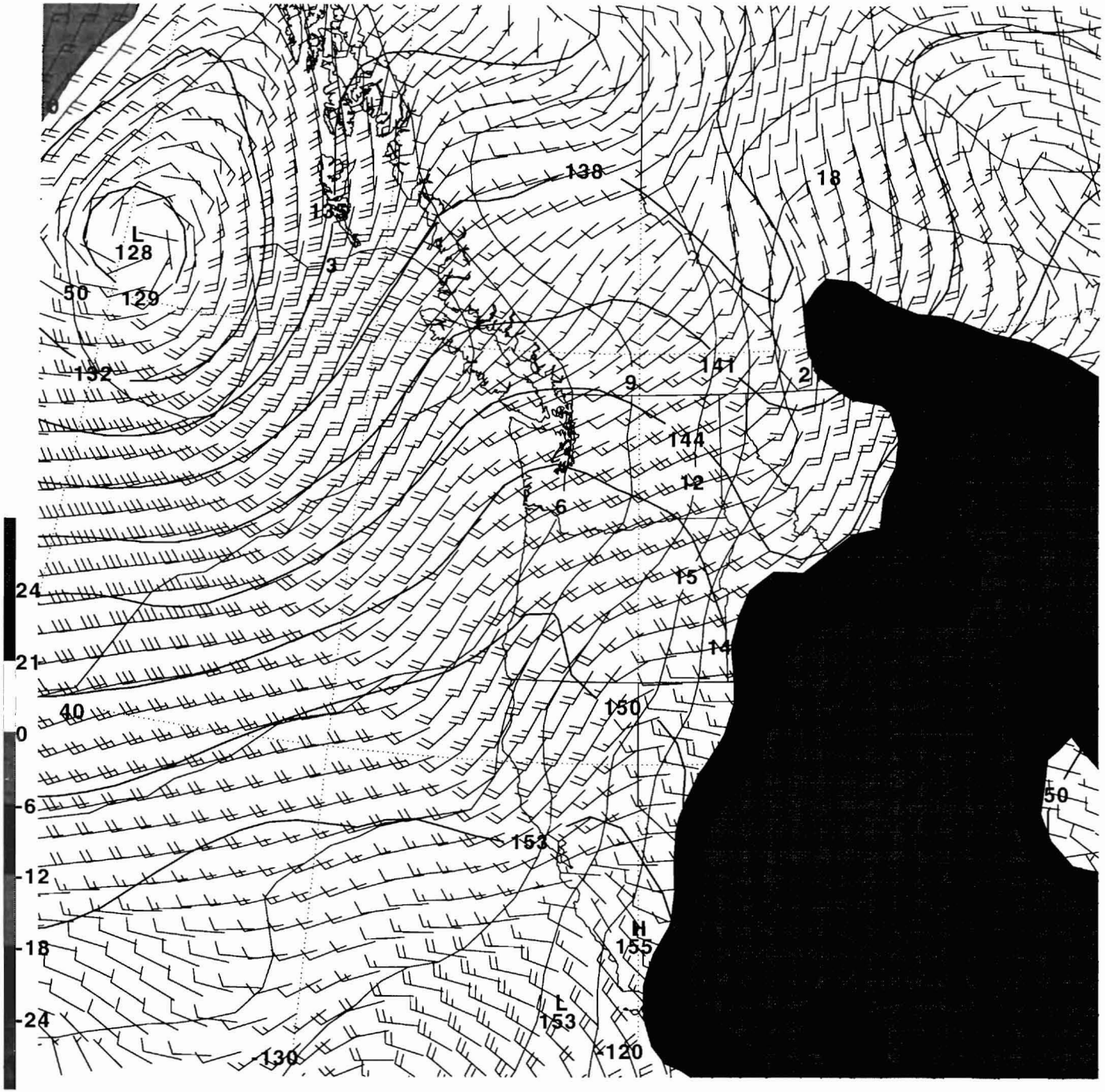
ETA 970601/0000V000 CAPE (J/KG)



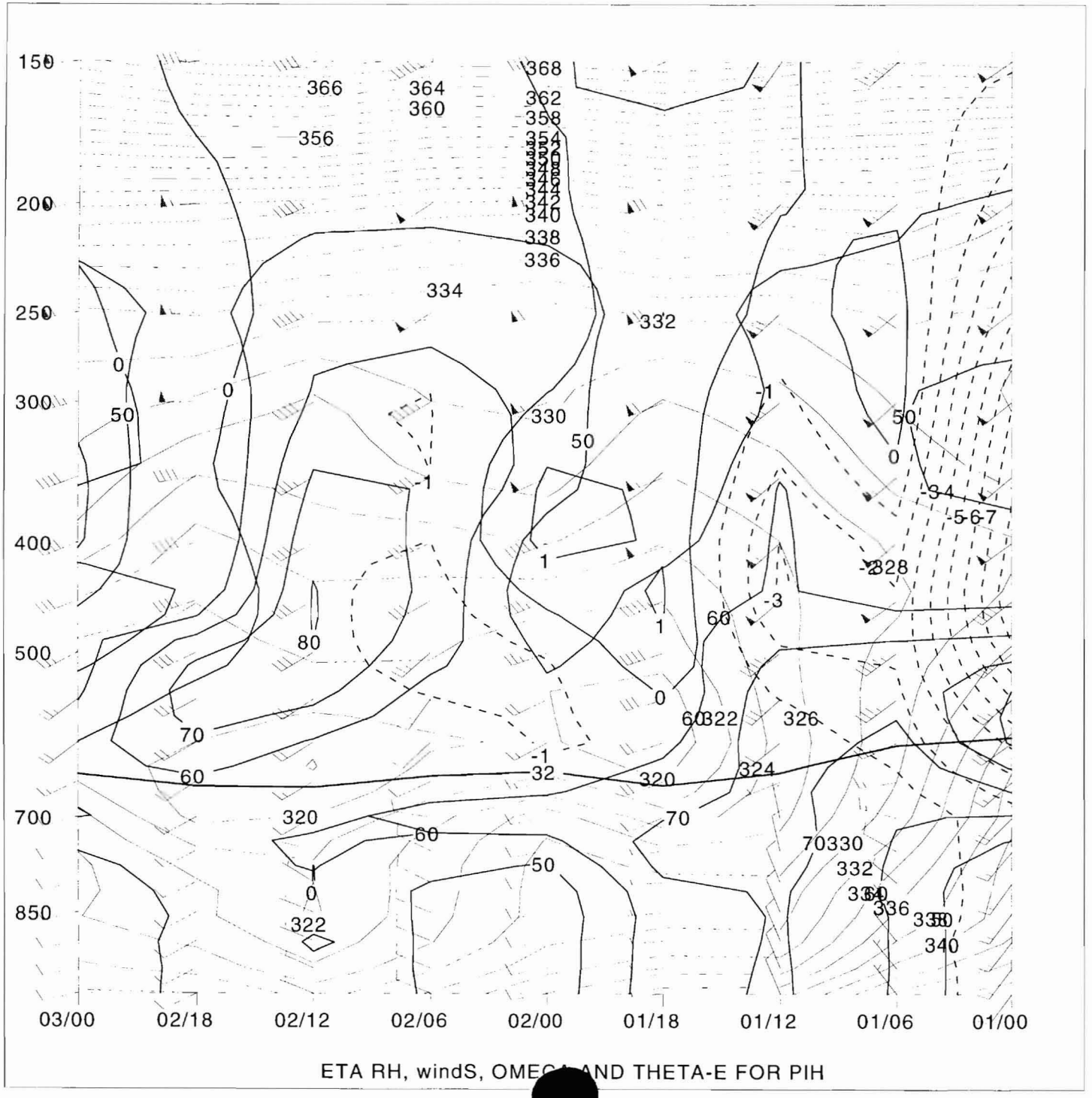
NGM 970601/0000V000 LIFTED INDEX



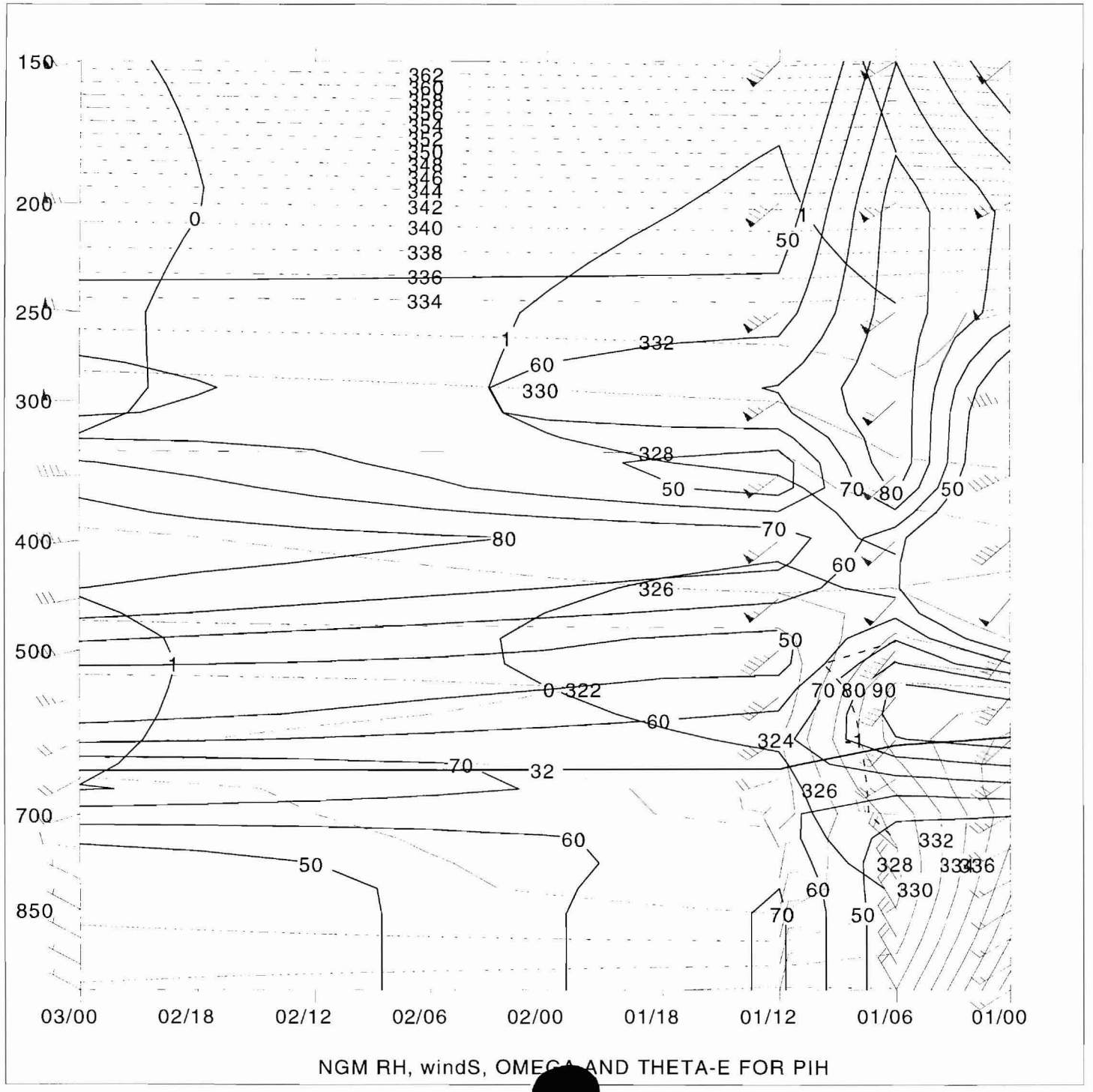
ETA 970601/0000V000 TT INDEX & MSLP



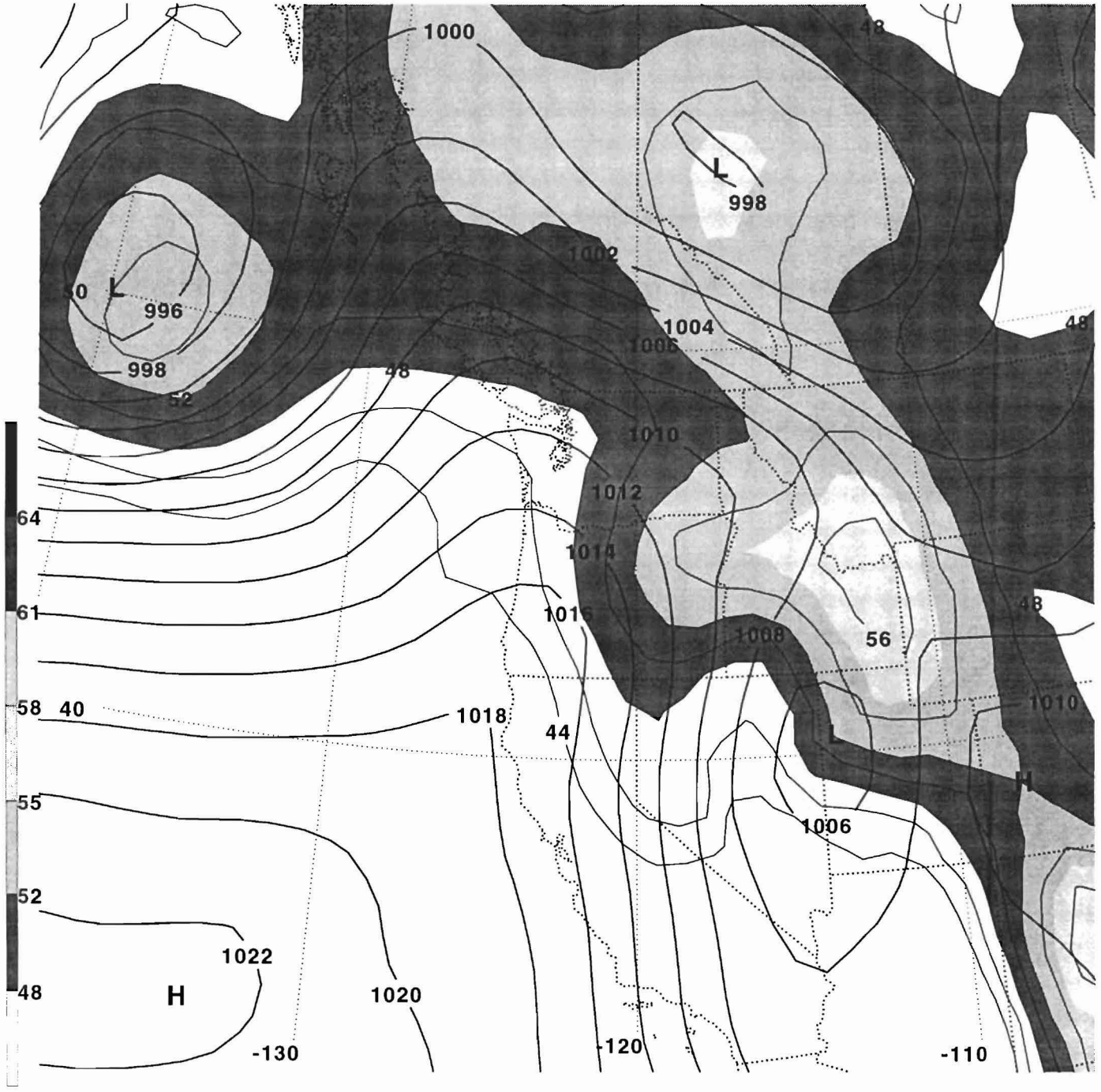
ETA 970601/0000V000 850 MB HGHTS, WINDS & TEMPERATURES



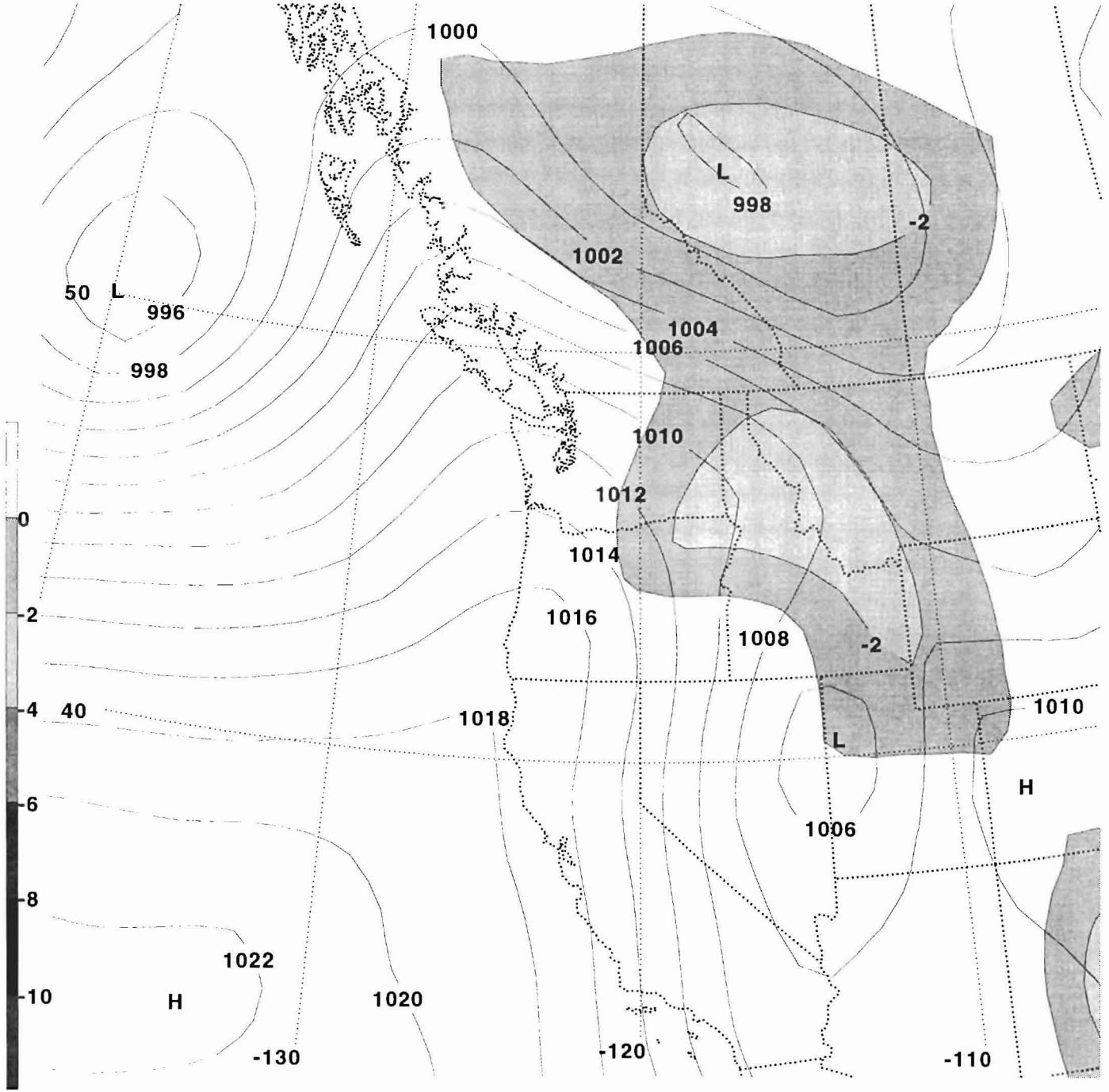
ETA RH, windS, OMEGA AND THETA-E FOR PIH



NGM RH, windS, OMEGA AND THETA-E FOR PIH



AVN 970601/0000V000 TT INDEX & MSLP



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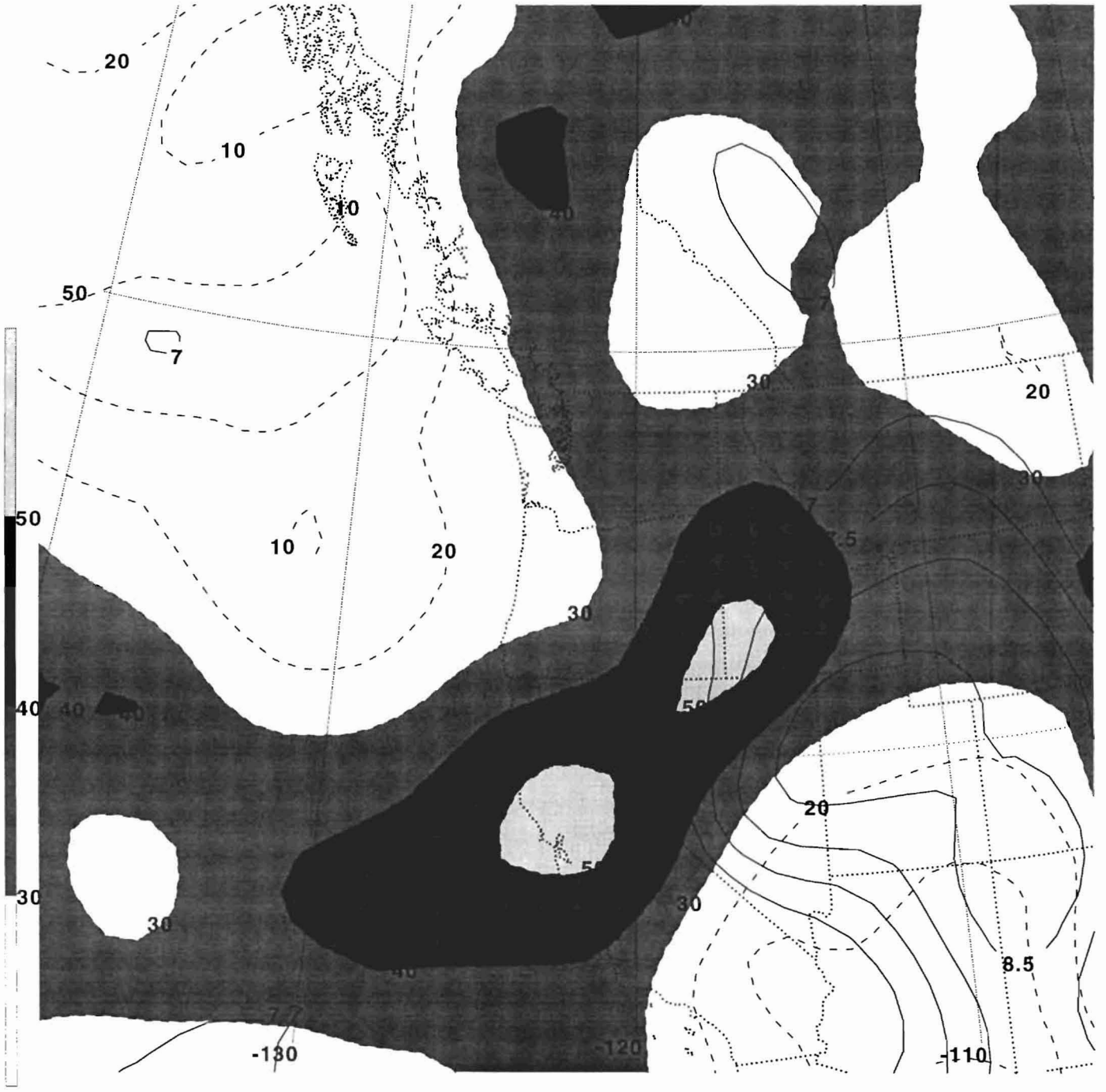
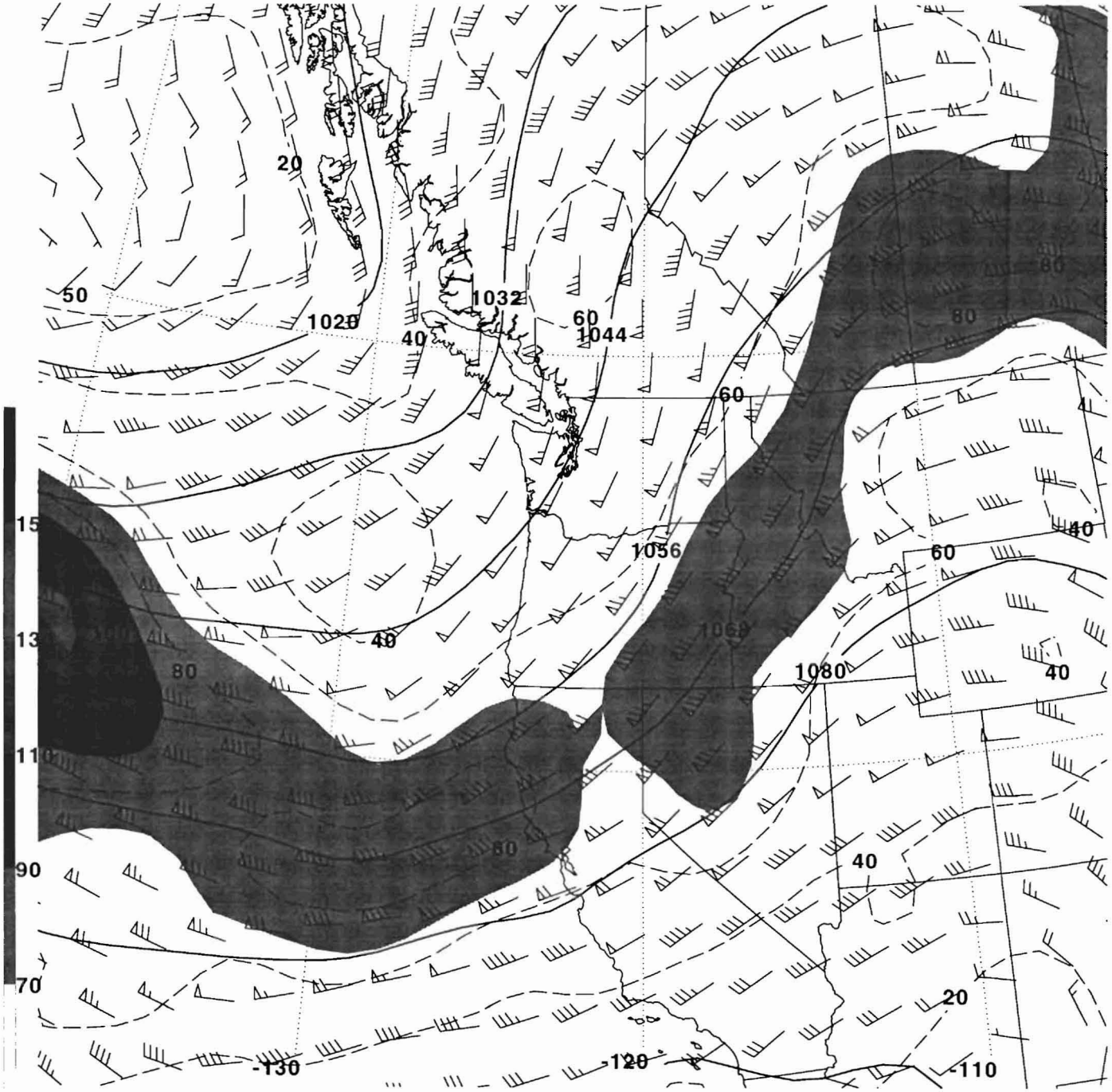
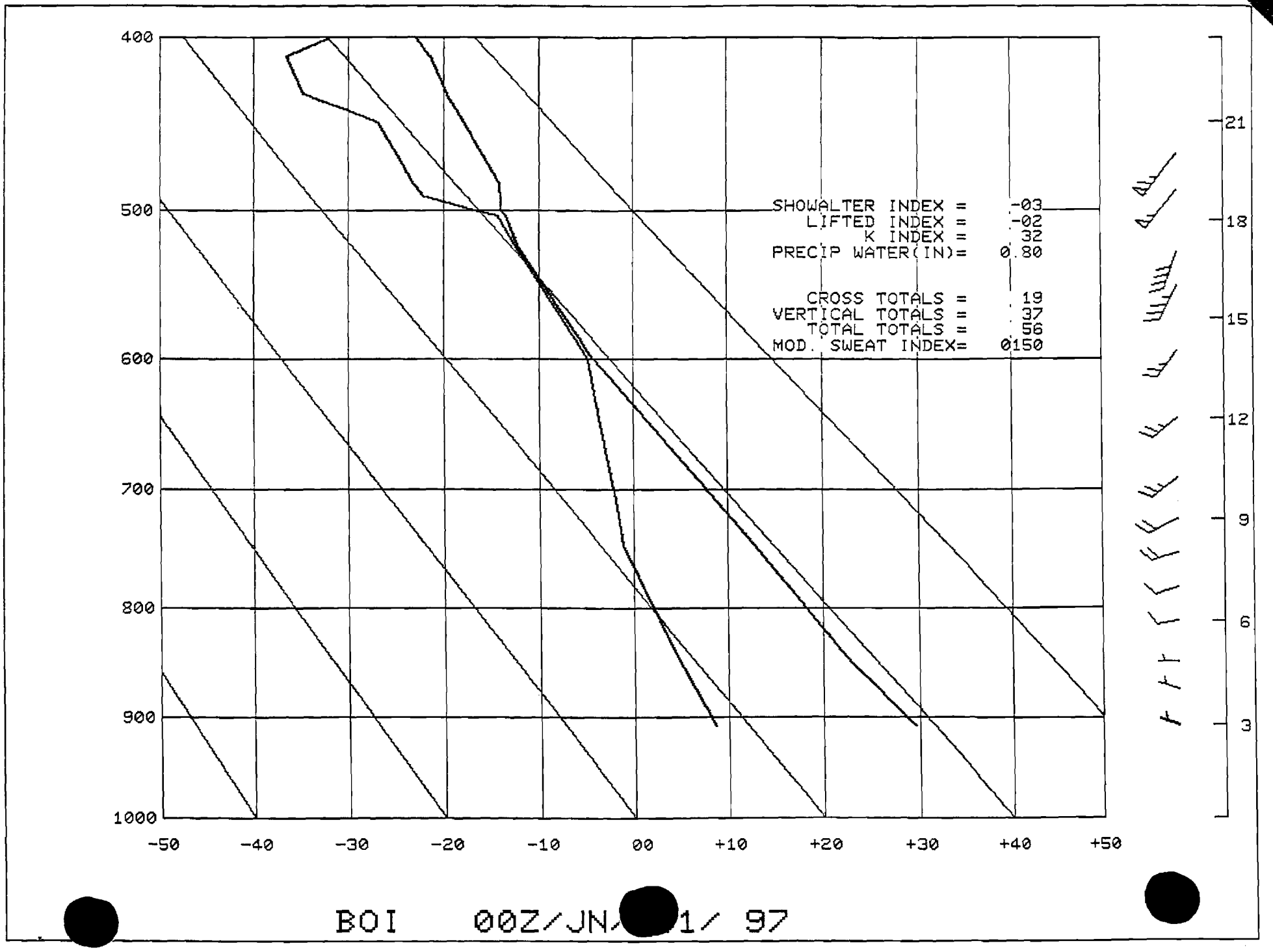


AVN 970601/0000V000 850-400 MB Shear and Mid-Level LR



ETA 970601/0000V000 250 MB HEIGHTS, ISOTACHS AND WIND (KTS)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500
600
700
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1000
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+30
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+50
21
18
15
12
9
6
3
SHOWALTER INDEX = -03
LIFTED INDEX = -02
K INDEX = 32
PRECIP WATER(IN)= 0.80
CROSS TOTALS = 19
VERTICAL TOTALS = 37
TOTAL TOTALS = 56
MOD. SWEAT INDEX= 0150
BOI 00Z/JN 1/ 97

RPIH
TTAA00 KPIH 010114

LOCAL STORM REPORT
NATIONAL WEATHER SERVICE POCATELLO/IDAHO FALLS ID
710 PM MDT SAT MAY 31 1997

TIME(MDT)	...CITY LOCATION... ...COUNTY LOCATION...	STATE	...EVENT/REMARKS...
1015 AM 05/31/97	IDAHO FALLS 20M W BONNEVILLE	ID	STRONG THUNDERSTORM 20 MILES WEST IDAHO FALLS.
1124 AM 05/31/97	DRIGGS TETON	ID	STRONG THUNDERSTORM. FREQUENT LIGHTNING FROM CLOUD TO GROUND.
1215 AM 05/31/97	VICTOR 10M NW TETON	ID	STRONG THUNDERSTORM 10 MILES NORTHWEST OF VICTOR IN PINEY PASS. PEA-SIZED HAIL/THUNDER/FREQUENT LIGHTNING.
1207 PM 05/31/97	DRIGGS 4M SW TETON	ID	FUNNEL CLOUD 4 MILES SOUTH-WEST DRIGGS. SHORT LIVED. EXTENDED FROM CLOUD BASE 200 FEET THEN DISSIPATED. DID NOT TOUCH THE GROUND. ACCOMPANIED THUNDERSTORM WITH PEA-SIZED HAIL.
0305 PM 05/31/97	MINIDOKA MINIDOKA	ID	AT DAM. PEA-SIZED HAIL. HEAVY RAIN.
0320 PM 05/31/97	RUPERT MINIDOKA	ID	4 MILES EAST AND 2 MILES SOUTH. GOLF BALL SIZED HAIL WITH STRONG THUNDER-STORM.
0335 PM 05/31/97	ARCO BUTTE	ID	QUARTER SIZED HAIL
0400 PM 05/31/97	ARCO BUTTE	ID	SHERIFF REPORTED PEA TO MARBLE SIZED HAIL
0440 PM 05/31/97	HOWE BUTTE	ID	GOLF BALL SIZED HAIL
0448 PM 05/31/97	POCATELLO BANNOCK	ID	TORNADO BRIEFLY TOUCHED DOWN NEAR DRIVE-INN SOUTH OF TOWN. NO DAMAGE. ONE DOZEN+ PEOPLE WITNESSED EVENT.
0450 PM 05/31/97	CHUBBUCK BANNOCK	ID	LIGHTNING INDUCED FIRE AT I-15/I-86 CONFLUENCE
0451 PM 05/31/97	CHUBBUCK BANNOCK	ID	FUNNEL CLOUD EAST OF CHUBBUCK MOVING NORTH. MAY HAVE TOUCHED DOWN BRIEFLY.CONFIRMED BY SPOTTER AND SHERIFF.
0505 PM 05/31/97	POCATELLO AIRPORT POWER	ID	WEATHER SERVICE OFFICE. FUNNEL CLOUD DISTANT NORTH OF AIRPORT MOVING NORTH-EAST.
0525 PM 05/31/97	CAMAS 8M SW JEFFERSON	ID	CONFIRMED TORNADO. 8 MILES SOUTHWEST CAMAS IN THE MUD LAKE/TERRETON AREA. TREES AND POWER LINES DOWN. A ROOF OF A HOUSE BLOWN OFF. COUNTY SHERIFF CONFIRMED.
0553 PM	SAGE JUNCTION	ID	CONFIRMED TORNADO. SECOND