

Developed
by
Terry Lankford

Interpretation & Application of Graphical Weather Forecasts



14 CFR 91.103 Preflight Action.

Each pilot in command shall, before beginning a flight, become familiar with all available information concerning that flight. This information must include—

“...weather reports and weather forecast, fuel requirements,...” and “alternatives available ...before beginning a flight....” This may involve the translation, interpretation, and application of graphical forecasts.

Graphical Forecasts

Graphical Forecasts for Aviation (GFA) replaced text area forecasts in 2017. They provide a forecast for the enroute phase of flight and locations without a TAF, with a temporal resolution of one hour available up to 15 hours—updated continuously.

Aviation Surface/Clouds forecast graphics, a low-bandwidth subset of the GFA, have a temporal resolution of three hour available up to 18 hours—updated every three hours.

Warning

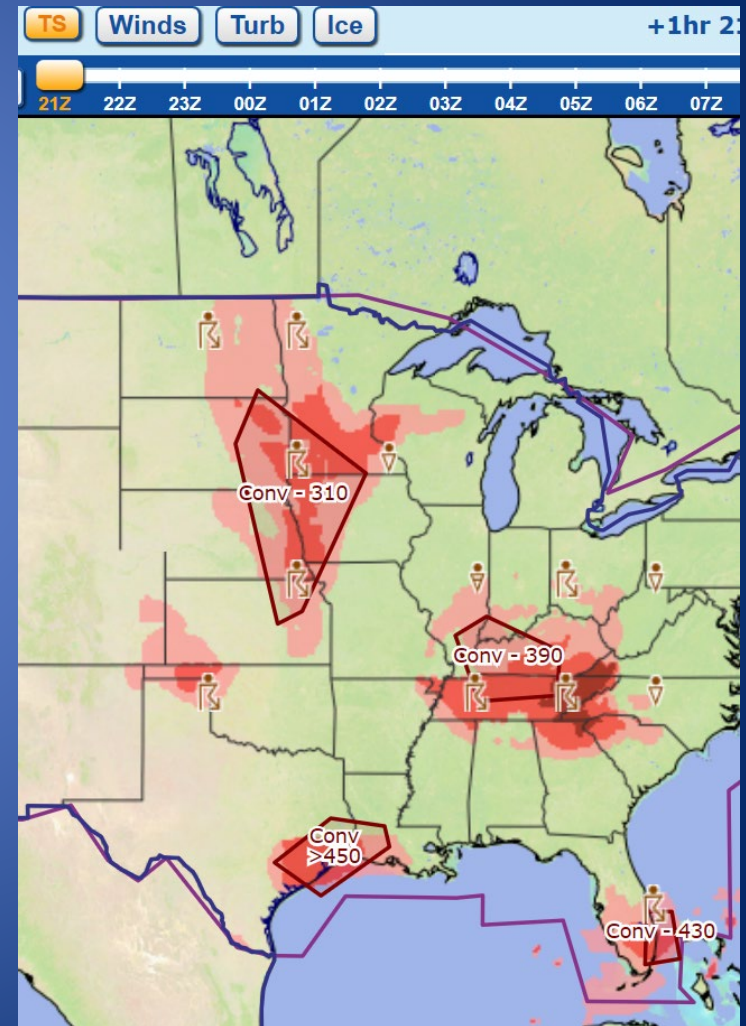
The GFA and Surface/Clouds products provide a "snap shot" of expected weather. Phenomena will change at either a regular or irregular rate at an unspecified time within the period. Avoid interpolating between "valid times."



Warning

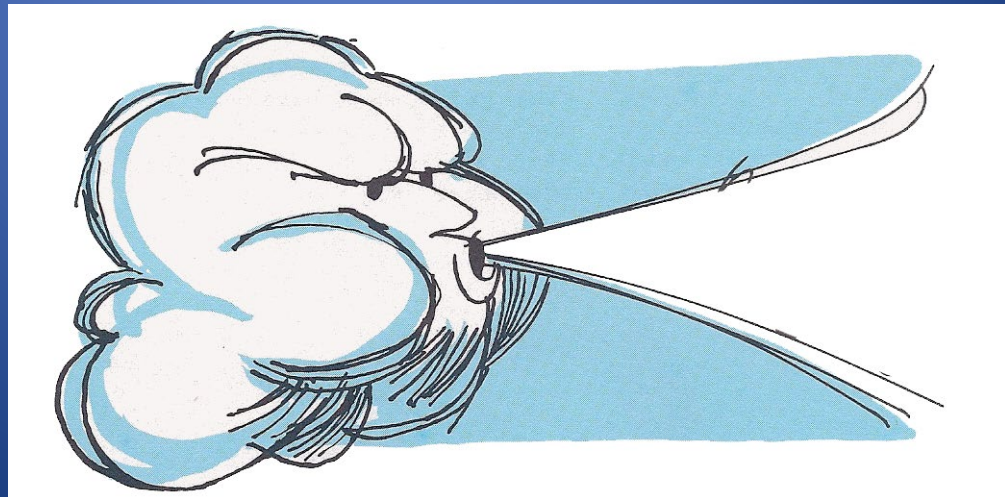
GFA displayed SIGMETs/Convective SIGMETs and Severe Thunderstorm/Tornado Watch Notification messages *only* display during the valid time of the product. Should advisories continue beyond (CONTG BYD) their valid or OUTLOOK period the advisory is NOT displayed.

Weather Overlay point forecast symbols, Winds barbs, and Clouds point forecasts may NOT represent adjacent conditions. Weather between points may be substantially different, especially in mountainous areas.



Warning

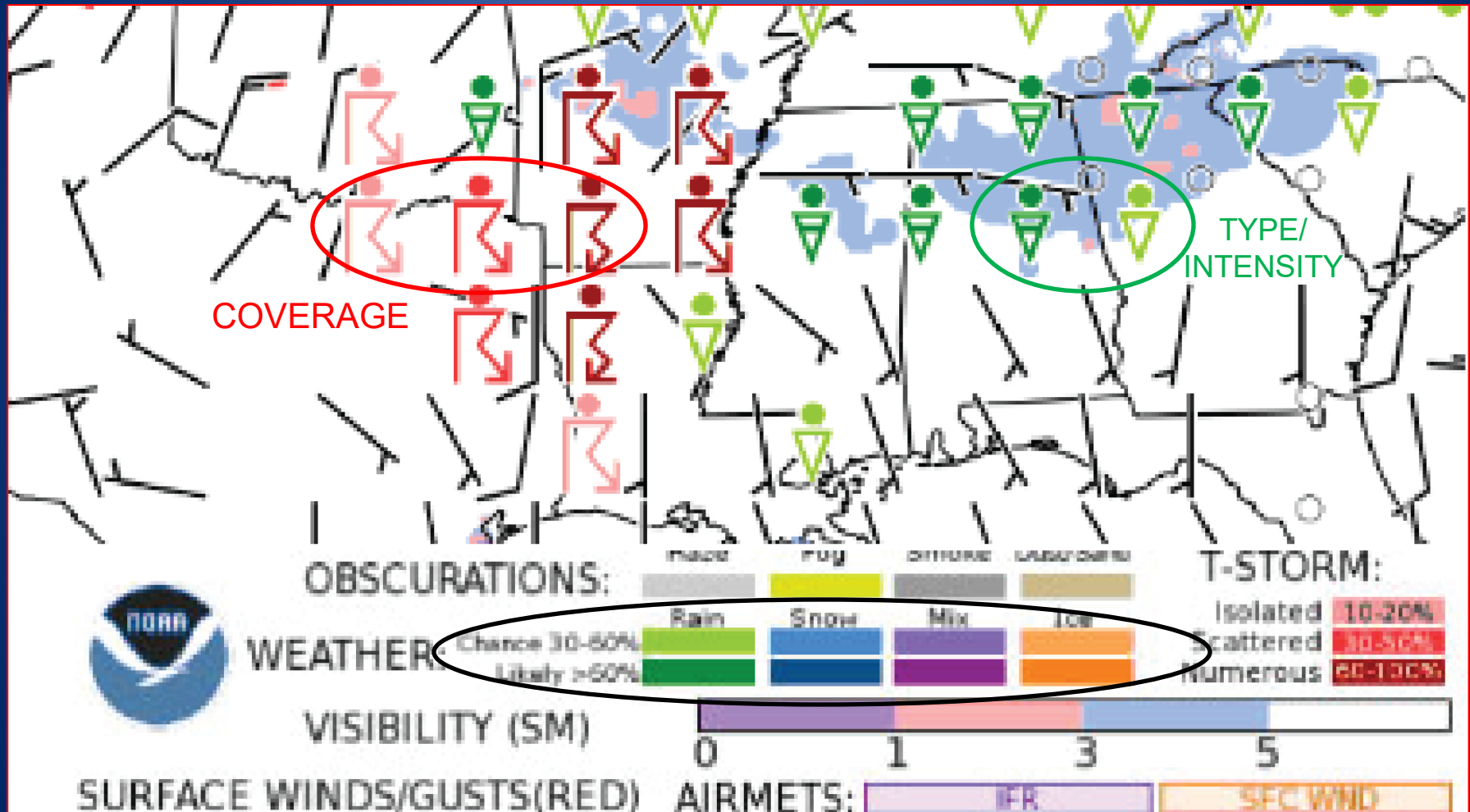
Ceilings, Visibilities, and Clouds heights (bases/tops) grids provide a range of values. Operationally, for Ceilings, Visibilities, and Clouds bases round DOWN to the lowest value; for Clouds tops round UP to the highest value. For Winds overlay apply the most significant (unfavorable) values.



Abridged GFA Weather Symbols

Precipitation			
-DZ (Drizzle)	”	+SN (Snow)	* * *
RA (Rain)	• • •	(PL) Ice Pellets	△
-SHRA (Rain Showers)	• ▽	+SHSN (Snow Showers)	* ▽
-FZDZ (Freezing Drizzle)	‘	+FZRA (Freezing Rain)	• ‘
TS (Thunderstorm)	TS	TSSN	+TSRA
	⌞	* ⌞	• ⌞
Obscurations			
BR (Mist)	==	BLDU/BLSA) Blowing Dust/ Sand)	\$
FG (Fog)	===	DS/SS (Dust- storm/Sandstorm)	S→
FZFG (Freezing Fog)	≡ ▽	BLSN (Blowing Snow)	↑ →
FU (Smoke) VA (Volcanic Ash)	~	HZ (Haze)	∞

Surface Forecast Product





SAN ANDREAS, CALIFORNIA

AL-6708 (FAA)

19171

WAAS CH 81842 W31A	APP CRS 311°	Rwy Idg TDZE Apt Elev	3602 1328 1328
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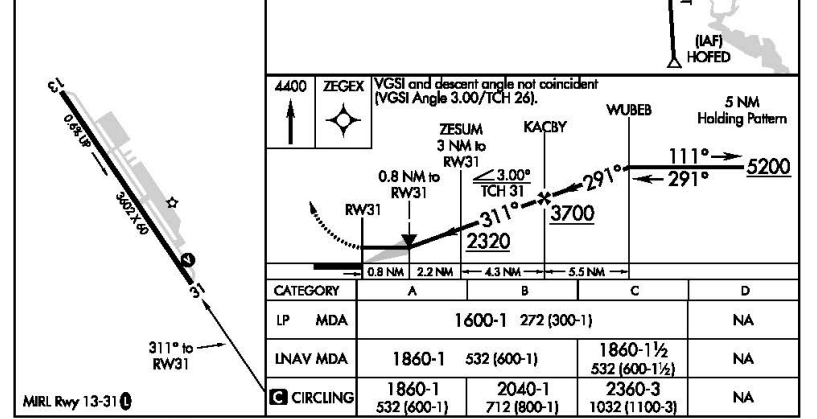
RNAV (GPS) RWY 31 CALAVERAS CO-MAURY RASMUSSEN FIELD (CPU)

RNP APCH.	MISSED APPROACH: Climb to 4400 direct ZEGEX and hold, continue climb-in-hold to 4400.
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AWOS-3P 118.525	NORCAL APP CON 125.1 363.2	UNICOM 123.0 (CTAF) 0
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ELEV 1328	TDZE 1328
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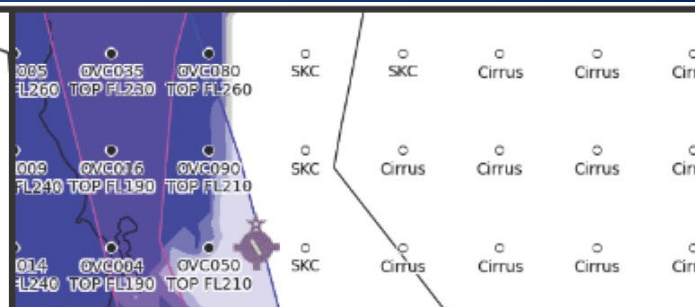
SAN ANDREAS, CALIFORNIA Amdt 1A 20JUN19	CALAVERAS CO-MAURY RASMUSSEN FIELD (CPU) 38°09'N-120°39'W
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RNAV (GPS) RWY 31

6/16/2020

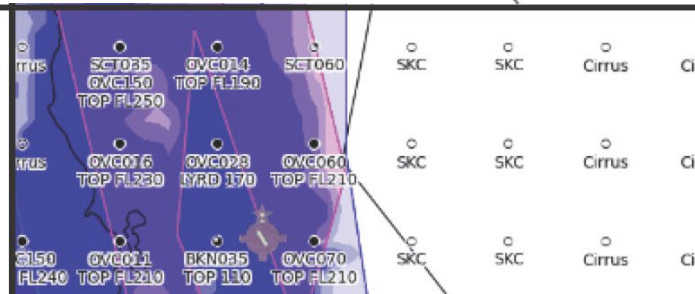
9

15Z



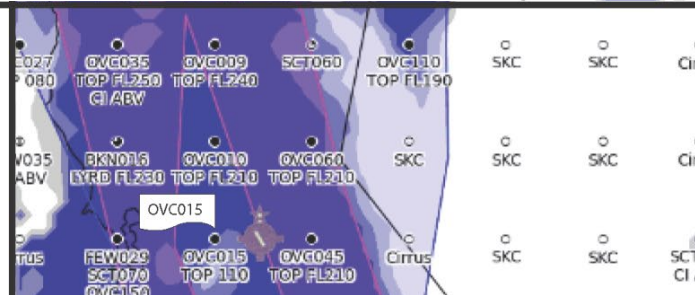
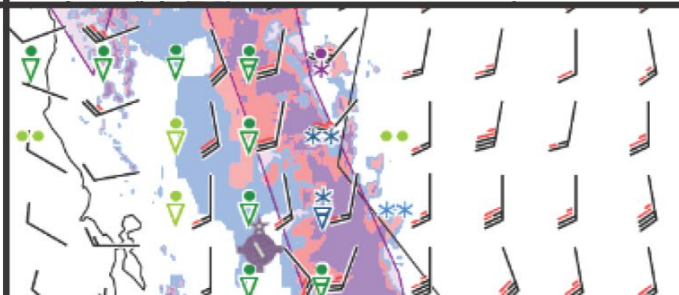
KCPU 191500Z 15020G30KT 5SM OVC036

18Z



191800Z 15020G30KT 1SM -SHRA OVC021

21Z



192100Z 15015G25KT 3SM -SHRA OVC002

TAF KCPU 191500Z 1915/1921 15020G30KT 1SM -SHRA OVC021
BECMG1821 OVC002

Graphical Forecasts for Aviation - Ceiling/Visibility

GFA

TAF CIG/VIS Clouds PCPN/WX TS Winds Turb Ice

+6hr 1900 UTC Sun 22 Dec 2019

Forecast Obs/Warn Map Options

14Z 15Z 16Z 17Z 18Z 19Z 20Z 21Z 22Z 23Z 00Z 01Z 02Z 03Z 04Z

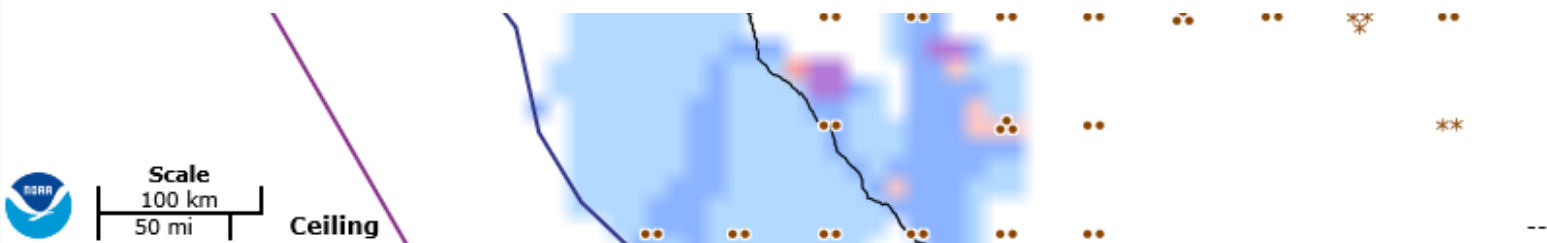
Hide Flight Path

Enter period-separated route:

KLVK.KCPU

Go

TAF KCPU 191500Z 1915/1921 15020G30KT 1SM SHRA OVC020



CIG Ft AGL 0 100 300 500 700 1000 2000

AIRMETs CIG/VIS IFR

Weather Symbols

SIGMETs

Con-
vective

Conv

Thunder-
storm

TS

Trop
Cyclone

TC

Blowing
Dust/Sand

IFR

Volcanic
Ash

VA

Warnings

Winter
Storm

WS

Blizzard

BZ

KCPU METARs

KCPU 221455Z AUTO 15012KT 10SM CLR 13/M06 A2973
KCPU 221515Z AUTO 16013G19KT 10SM CLR 13/M05 A2973
KCPU 221535Z AUTO 16015G26KT 10SM BKN095 BKN120 14/M05 A2973
KCPU 221555Z AUTO 17014G19KT 10SM SCT055 SCT075 OVC085 14/M04 A2975
KCPU 221615Z AUTO 19019G28KT 10SM SCT055 BKN075 OVC085 14/M05 A2978

KCPU 221655Z AUTO 17018G29KT 5SM HZ SCT018 BKN040 OVC050 09/04 A2982
KCPU 221715Z AUTO 17019G28KT 4SM HZ SCT019 SCT027 OVC048 08/05 A2982

KCPU 221755Z AUTO 15010G17KT 2 1/2SM BR SCT032 BKN040 OVC045 08/06 A2984
RMK AO2 VIS 1 1/2V5
KCPU 221815Z AUTO 12013G20KT 5SM BR BKN026 OVC034 08/06 A2984

KCPU 221855Z AUTO 21004KT 7SM OVC033 07/06 A2986
KCPU 221935Z AUTO 14005G14KT 7SM BKN027 OVC033 07/06 A2985
KCPU 221955Z AUTO 00000KT 10SM SCT027 OVC035 08/05 A2984
KCPU 222015Z AUTO 13013G18KT 10SM BKN029 OVC035 08/05 A2983
KCPU 222035Z AUTO 12022G26KT 10SM OVC029 08/05 A2981

KCPU 222055Z AUTO 12017G25KT 5SM HZ OVC032 07/04 A2980

Operationally


 Update weather enroute.

 METARs for destination and alternates.

 Check TAFs—especially at TAF update times.






 Monitor fuel reserves.

 Land short or divert.

 Should conditions approach, or deteriorate below, regulatory or (*realistic*) personal minimums—including surface winds.

 Do not hesitate to execute a missed approach should circumstances warrant.

Limitations

-  Weather Symbols are point forecasts and may not represent surrounding conditions.
-  Displays may suffer from clutter—especially the GFA.
-  No amendments. (Although, Weather Advisories automatically amend the forecast.)
-  Automated; may not be as accurate as forecasts with human involvement (e.g. Weather Advisories and TAFs).
-  Operationally, use all available information and apply personal minimums.

Advantages



Updated continuously (GFA Suite).



Displays scalable and customizable (GFA Suite).



Temporal resolution (GFA Suite) 1 hour;
(Aviation Surface/Clouds) 3 hours.



Forecasts to 15 hours (GFA Suite);
(Aviation Surface/Clouds) 18 hours.

Closure

Every theory of the course of events in nature is necessarily based on some process of simplification of the phenomena and is to some extent therefore a fairy tale."

Sir William Napier Shaw (circa 1920)

Watch out for absolutes; weather is complex and dynamic. There are few if any "never" or "always" when it comes to weather.

Many weather phenomena are transitory (e.g. turbulence and icing).

"The weather-wise pilot looks upon a forecast as professional advice rather than as the absolute truth."

AC 00-6 Aviation Weather (1965)

LEGAL does not necessarily mean SAFE.



SAFE does not mean risk free.

Send questions, comments, or suggestions to:

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