

Weather Evaluation Team



CDM

Collaborative
Decision Making

Jason Baker, FAA

Richard Egert, United Airlines

April 13, 2022



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Decision Making

Membership Status

WET TEAM ROSTER			
WET Co-Leads			
Jason	Baker	FAA ANG-WX	FAA -ANG-C6
Richard	Egert	United	Industry SME
FAA Members			
Pat	Murphy	FAA	FAA-ANG-C6
Amy	Galvan	FAA/ATCSCC/BUE	ATCSCC
Eric	Avila	ZHU	FAA-NATCA SME
Industry Members			
John	Kosak	NBAA	Industry SME
Jeff	McLaren	AAL	Industry SME
Jeff	Sarver	UPS	Industry SME
Stephanie	Klipfel	DAL	Industry SME
Kory	Gempler	FDX	Industry SME
Erik	Proseus	FDX	Industry SME
Neal	Husa	ASA	Industry SME
Mark	Johnson	Southwest	Industry SME
Jeffery	Cohen	Southwest	Industry SME
Christine	Gregg	JetBlue	Industry SME
Additional Members			
Eric	Dupuis	NavCanada	
Gilles	Ratté	Met Services of Canada	
Kevin	Stone	NWS/HQ	
Jennifer	Stroozas	NWS/AWC	

Past Achievements

- Seamless transition to new WET leadership
- Started partnership with Emerging Weather Requirements Service (ANG-C64)
- NWS Webpage Enhancements
- Revised SFO Forecast Process; not Marine Stratus Forecast System (MSFS) dependent
- 2022 TCF Training Update



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Task 101 SFO MSFS & GPSM

What are two must-haves for effective decision-making in ATC/Weather Complex Environments?

Decision Makers

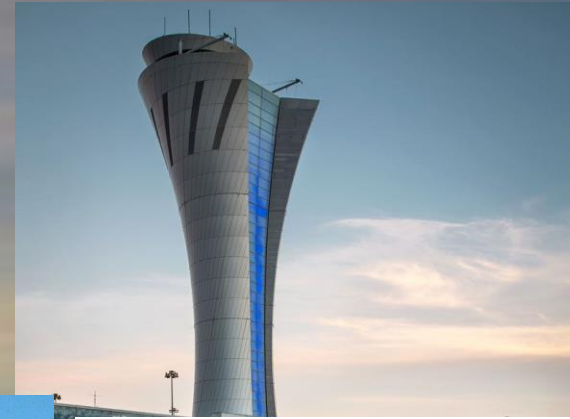
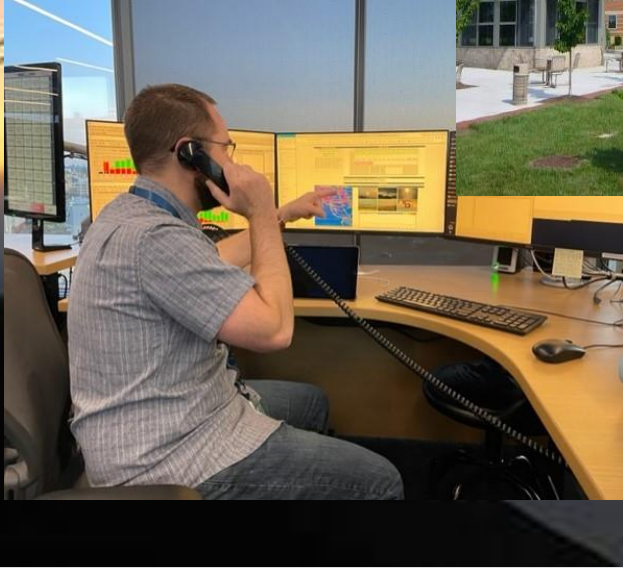
Reliable Data/Processes



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Task 101 SFO MSFS & GPSM

Decisions Makers





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Task 101 SFO MSFS & GPSM

Reliable Data / Processes

SFO Marine Stratus Forecast System (MSFS)



- Outdated Equipment and Software
- Loss of key components
- Budgetary funding

Task 101 SFO MSFS & GPSM

- Actions Taken:
- Partnered with Aviation Weather Division
 - Supported requirement's letter from FAA-NWS
 - Subject Matter Expertise for system redesign
 - Potential weather data format for GDP
Parameter Selection Model (GPSM)



Task 101 SFO MSFS & GPSM

NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

Stratus Map Obs Winds Forecast Hazards Discussion Gradients Models 24hr Comp Satellite Radar Cams

ZOA CWSU Discussion

Visual Approaches all day, afternoon gusts to 34KTS

FORECAST CLEARING: VAPS all day

CONFIDENCE: HIGH

Updated at 08/12:38z

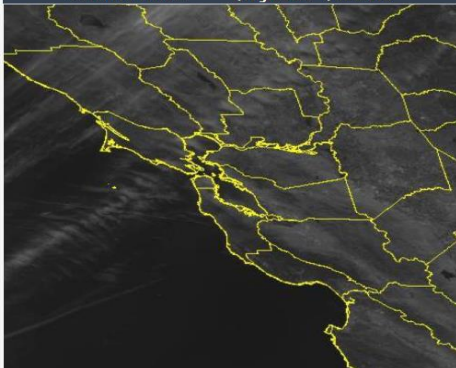
Satellite imagery shows scattered high clouds over central California and an approaching frontal system off the coast. Weakening onshore flow is indicated by a 0.5mb SFO-ACV surface pressure gradient should maintain a stratus free morning for all Bay Area terminals. 11Z LAMP results indicate a chance of a ceiling below 3000ft at <10% during 12Z - 19Z. Afternoon increase in winds from the WNWV with gusts of 34KT.

		KSFO TAF TDA										
		08/21z	08/22z	08/23z	09/00z	09/01z	09/02z	09/03z	09/04z	09/05z	09/06z	09/07z
FICat		HVFR	HVFR	HVFR	HVFR	HVFR	HVFR	HVFR	HVFR	HVFR	HVFR	H
Wx												
Wind		WNW19 g27	WNW19 g27	WNW19 g27	WNW20 g31	WNW20 g31	WNW20 g31	WNW20 g31	W12 g18	W12 g18	W12 g18	W1
LLWS												
Info		KSFO 082056Z 0821/0924 30019G27KT P6SM FEW250 FM090000 29020G31KT P6SM SKC FM090400 28012G18KT P6SM SKC FM091000 28009KT P6SM SKC FM091500 VRB06KT P6SM SKC WS020/01025KT FM091900 30011G22KT P6SM SKC=										

KSFO/KSQL METAR
METAR KSFO 082130Z AUTO 29023G28KT 10SM CLR 19/09 A3005
METAR KSQL 082052Z 27010KT 10SM SCT200 27/09 A3005





Area PIREPs

Satellite Visible Nighttime GeoColor



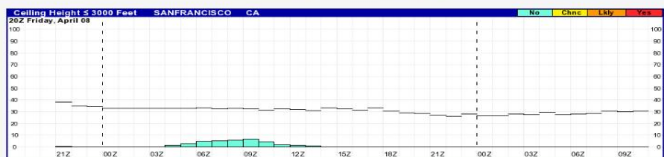
08 Apr 2022 21:31Z NOAA/NESDIS/STAR GOE

Webcams, Ceiling<=030 Prob

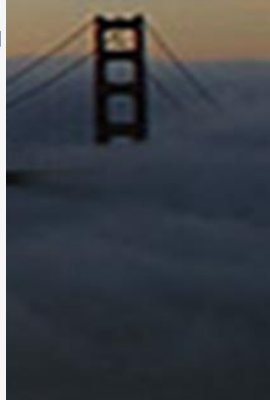





San Mateo Boardsports to SFO

San Francisco...



• [htt](http://)





Task 101 SFO MSFS & GPSM

KSFO TAF TL

Satellite Visible

⇒Nighttime

⇒GeoColor

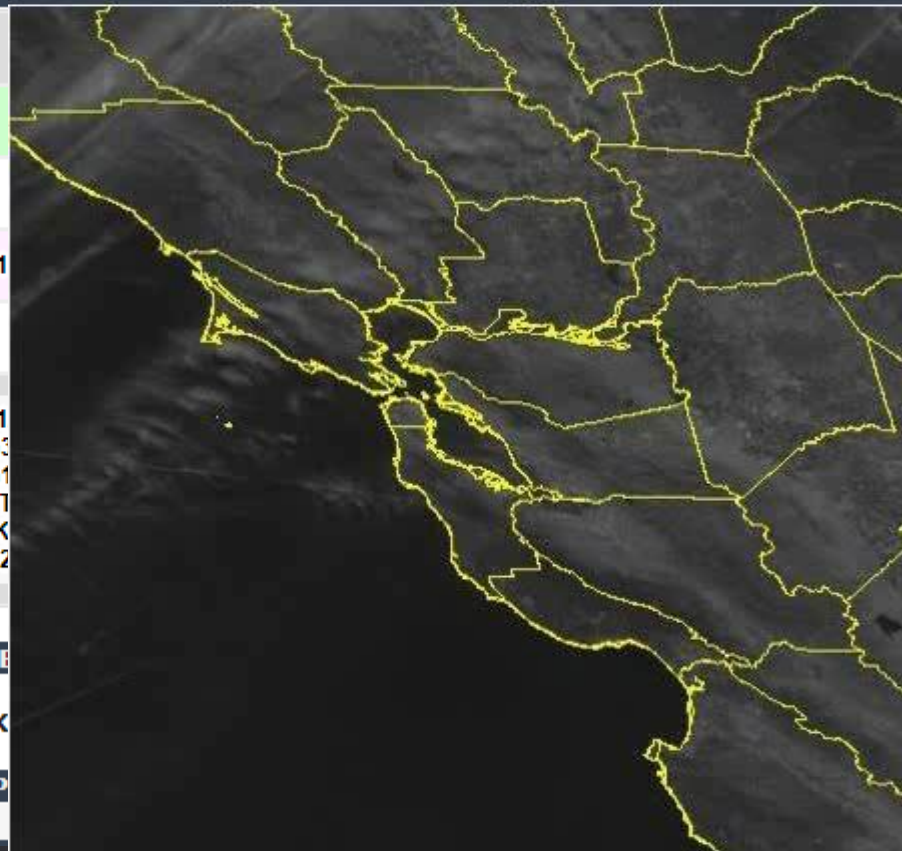
KSFO	08/21z	08/22z	08/23z	09/00z	09/01z
FICat	HVFR	HVFR	HVFR	HVFR	HVFR
Wx	<div> <p>✓ Latest Satellite Imagery</p> </div>				
Wind					
LLWS					
Info	<div> <p>KSFO 082056Z 0821 FM090000 29020G3 FM090400 28012G1 FM091000 28009KT FM091500 VRB05K FM091900 30011G2</p> </div>				

KSFO/KSQL ME

METAR KSQL 082052Z 27010KT 10SM SCT200 27/09 A3005

METAR KSFO 082056Z 29019KT 10SM BKN200 20/09 A3006 RMK

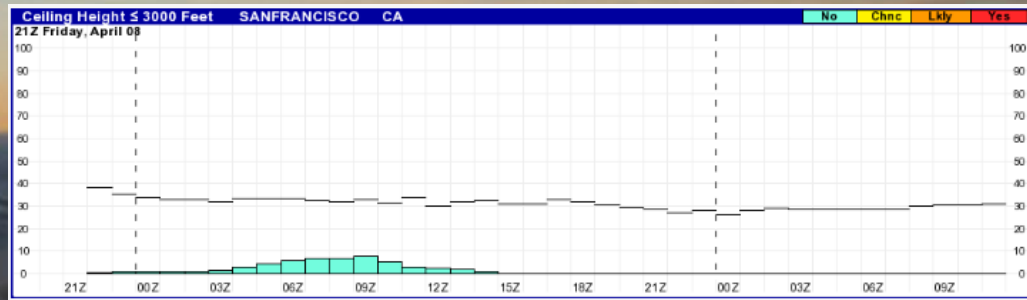
Area PIREP



Task 101 SFO MSFS & GPSM

- Here are some highlights from the webpage:

✓ Meteorological models including GFS Lamp Data for ceiling heights



Task 101 SFO MSFS & GPSM

- Here are some highlights from the webpage:
 - ✓ Latest graphical map page showing all regional airports METARs along with TAFs
 - ✓ Latest five minute updates for METARs
 - ✓ NWS Area Forecast Discussion
 - ✓ Various meteorological data

Task 101 SFO MSFS & GPSM

What additional resources would the CDM community like to see?

- ATC Traffic Data
- RVR Data
- More camera angles

Task 101 SFO MSFS & GPSM

- Ground Delay Program Parameters Selection Model (GPSM)

WET Task: Work with Mosaic ATM in the development of the SFO GPSM to evaluate effectiveness and application to the SFO area

Task 101 SFO MSFS & GPSM

Actions To Be Taken:

- Resolve flight / weather data input issues
- Update GPSM algorithms
- Obtain official government and industry support for further development and refinement of GPSM



Task 101 SFO MSFS & GPSM

GPSM Scenario

GPSM Recommendations
PERTI/Planning Webinars
Initial GDP Guidance

Continuous Monitoring
SFO RWY CONFIG/AAR

+ ZOA CWSU/MSFS

Current				
ATCSCC ADVZY				
MESSAGE: 036 SFO ZOA 06/15/2019 CDM GROUND DELAY PROGRAM				
112 GDP RECOMMENDATIONS				
Traffic Data: 12:30 GMT				
Start Time	9/9	14:15	14:15	14:15
End Time	9/9	19:14	19:44	20:14
Slope	9/9	1000	1000	1000
AAR	9/9	45g/18:15	45g/18:15	45g/18:15
Risk	9/9	3%	7%	4%
Benefit	9/9	5	5	5
Delay Reduction	9/9	100%	41%	26%

GPSM: High Confidence					AAR		Notes	
152 GDP RECOMMENDATIONS					IMC	LOW	IMC	
Traffic Data: 19:10 GMT								Minimum Ceiling for VAPS 3000 - 3500
Start Time	9/9	19:44	17:44	19:14	30	27		
End Time	9/9	19:44	17:44	19:14	30	27		
Slope	9/9	1000	1000	1000	36			SOIA Rate for RWY 28R/28L minimum 1600/vis 4.
AAR	9/9	45g/17:45	45g/17:15	45g/17:45	36			
Risk	9/9	3%	7%	4%	30	27		
Benefit	9/9	5	5	5	25	25		
Delay Reduction	9/9	11%	70%	40%	25	25		
Expanded statistics					28		Minimum Ceiling for VAPS 4000-4500	

NATIONAL WEATHER SERVICE
SFO Marine Status Forecast System

CWSU Outlook Forecast
4-AN (4-AN) 06/15/2019 06:00 UTC

CWSU Outlook Forecast
PESMETIC FORECAST TODAY WITH UNUSUAL DUTY FREE OF STATUS INTO APPROACH

Model Forecast
Approach clear at 17:00 GMT

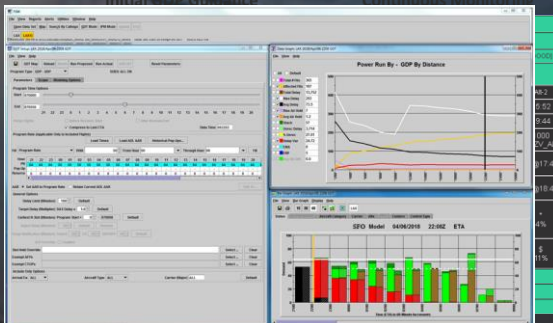
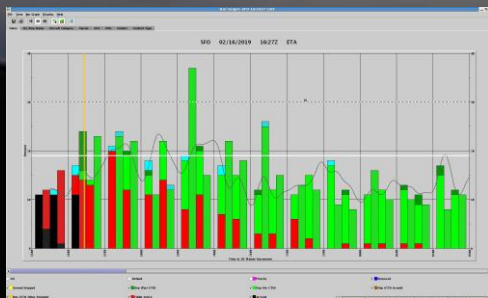
VPFO Hourly Discussion
Forecast: 100%
Actual: 100%
Forecast For Day: 5/1/202

Observations
The Day: 100%
The Night: 100%
Cool: 100%
Hot: 100%

SFO Demand/GDP Telcons

GPSM Recommendations
ATCSCC Models SFO GDP

SFO GDP Advisory Issued



ATCSCC Advisory

ATCSCC ADVZY 036 SFO ZOA 06/15/2019 CDM GROUND DELAY PROGRAM

MESSAGE: CTL ELEMENT: SFO
ELEMENT TYPE: APT
ADL TIME: 1253Z
DELAY ASSIGNMENT MODE: UDP
ARRIVALS ESTIMATED FOR: 15/1500Z - 15/1929Z
CUMULATIVE PROGRAM PERIOD: 15/1500Z - 15/1929Z
PROGRAM RATES: 36/36/36/45
FILT INCL: ALL CONTIGUOUS US DEP
DEP SCOPE: 1200
CANADIAN DEP ARPT'S INCLUDED: CYEG CYVR CYTC CYYJ CYLN
DELAY ASSIGNMENT TABLE APPLIES TO: ZOA
MAXIMUM DELAY: 102
AVERAGE DELAY: 60
IMPACTING CONDITION: WEATHER / LOW CEILLINGS
COMMENTS: ARR: 28L/28R, DEP: 01L/01R, TIME +45 MEDIUM HISTORICAL POP UP FACTOR.

EFFECTIVE TIME: 151256 - 152029
SIGNATURE: 19/06/15 12:58

Task 101 SFO MSFS & GPSM


WET Team Task 101 Completion Status:

- ✓ Provide monthly status updates to the CSG.
- ✓ Engage with the appropriate FAA and/or NWS office to support the SFO MSFS
- Provide support for evaluation and application of SFO GPSM
- Provide information to the CDM Training Team



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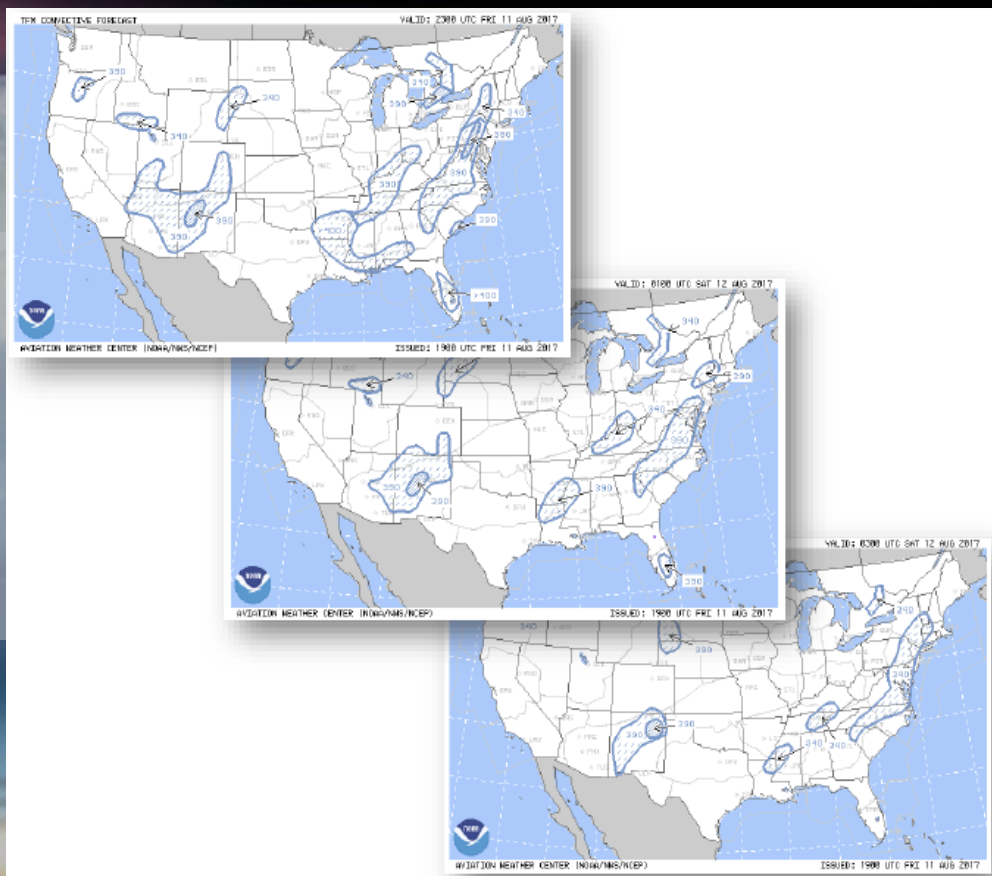
Task 106 TCF Capability Assessment



Improving air traffic flow management through an increased information exchange, including weather forecasting products, is a fundamental premise of Collaborative Decision Making.

Task 106 TCF Capability Assessment

- ✓ Issued 24/7
- ✓ Every 2 hours
- ✓ Forecast Period
- ✓ 4-6-8 hours





Task 106 TCF Capability Assessment

✓ Available through many tools for government / industry applications

WSI PILOTBRIEF OPTIMA

Welcome raj.singh@united.com Apr 11 | 19:26Z

Home Radar Satellite AV Charts Hazards Text TFRs

Region: CONUS

Charts Overview

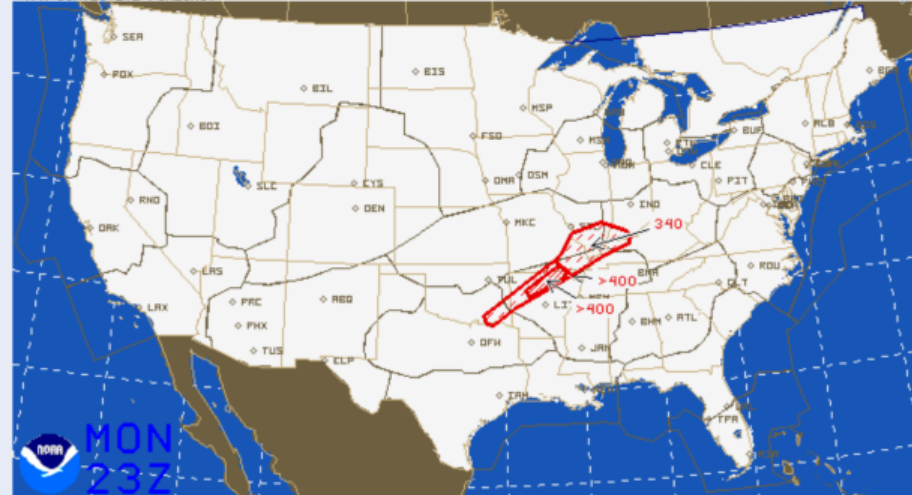
TCF - 4 hour Chart USA

Click Map to Zoom In  

Forecast Color

TFM CONNECTIVE FORECAST

VALID: 2300 UTC MON 11 APR 2022



AVIATION WEATHER CENTER (NOAA/NWS/NCEP)

ISSUED: 1900 UTC MON 11 APR 2022



Task 106 TCF Capability Assessment

✓ Clearly defined minimum criteria

Areas of convection:

- Polygon coverage $\geq 25\%$
- ≥ 40 dBZ reflectivity
- Echo tops \geq FL250
- Highly confident this will occur

Sparse 25-39% (broken hatching)



Medium 40-74% (solid hatching)



Solid Lines of convection:

- Linear coverage of $\geq 75\%$
- ≥ 40 dBZ reflectivity
- ≥ 100 nautical miles in length
- Echo tops \geq FL250
- Highly confident this will occur

Solid Line 75-100%



(Note: Lines can stand alone or be included within areas.)

Task 106 TCF Capability Assessment

WET Team Task 106 Completion Status:

- Conduct an assessment of the existing TCF capabilities.
- Record assessment activities and report findings monthly during the CDM Leadership meetings.
- Document findings to evolve the TCF into a more dependent interpretation of forecast data.
- Provide recommendations which may include additional future tasks for the WET

Summary

- WET Team back on track after 3 month hiatus
- Tasking recommendations expected late in 2022



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