Using the GOES-9 reflectivity product to identify fires (1 MAY 96 CAS

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The GOES-9 reflectivity product is generated by:

1) Taking the temperature at 10.7um and converting that to an equivalent 3.9um radiance

2) The actual 3.9um radiance is subtracted from the equivalent radiance

3) This leaves a product image that is mostly composed of the reflection of solar radiation and has a small component due to the emissivity difference between the 11um and 3.9um channels.

This product can help detect fires and distinguish between water and ice clouds. It can detect fires since the 3.9um channel has much more sensivity to hot temperatures than the 10.7um channel. So fires are detected due to the small component that is due to emissivity differences. For this same reason the fog product detects fires very well. NOTE: Fires show up as black in the fog/stratus product. In the examples below, from RAMSDIS, the fire shows up as bright (yellow, with extreme temperatures) in the reflectivity product. The visible imagery confirms the fire location as the smoke plume is very apparent.

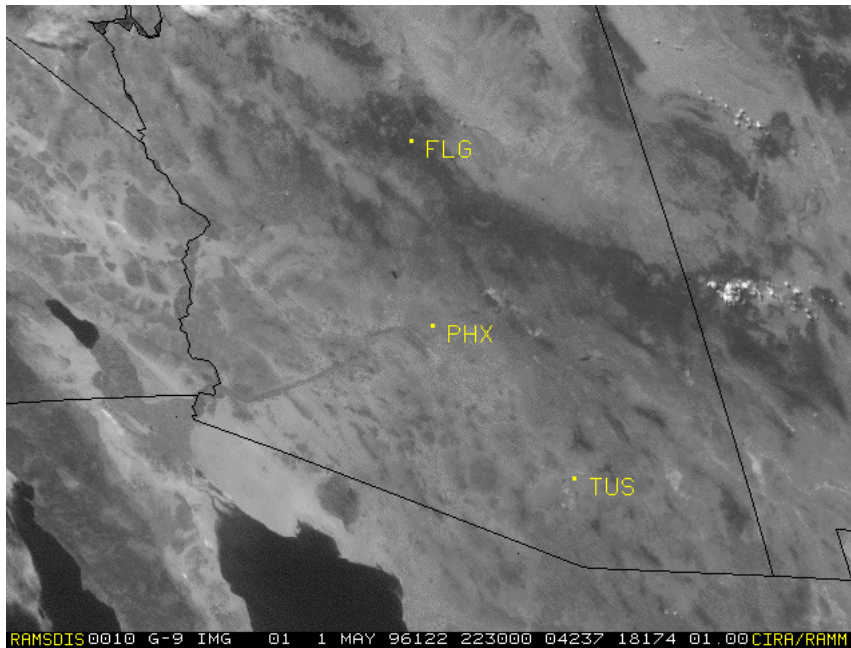FIGURE 1a. 1 km VIS imagery (2230Z 1 May 1996)

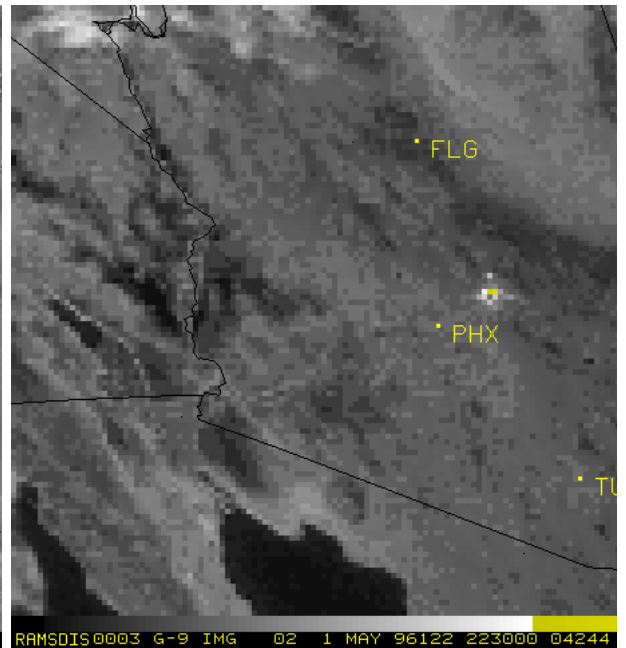Figure 1b. 3.9um image displayed at 1 km resolution (2230Z 1

FIGURE 2a. 1 km VIS imagery (2245Z 1 May 1996)
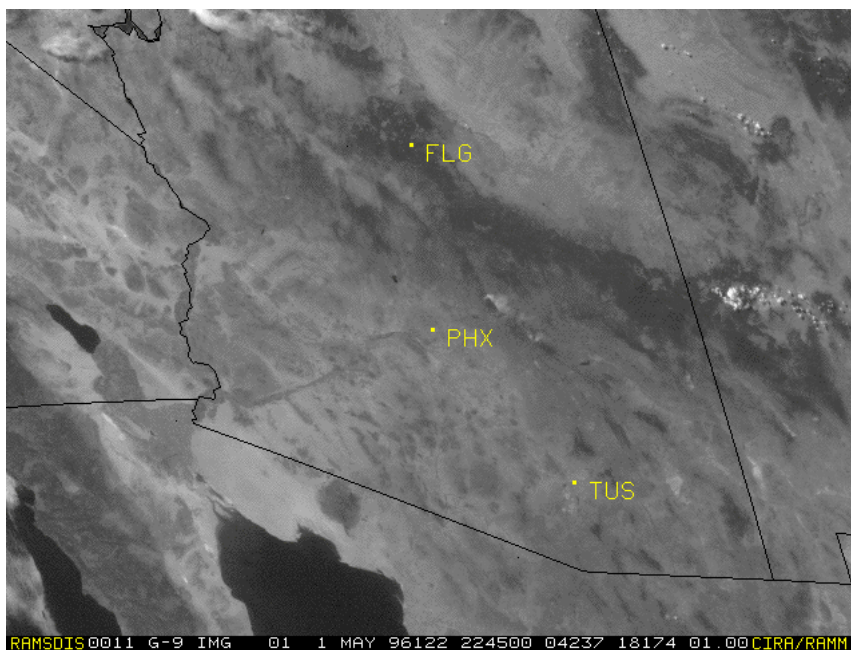

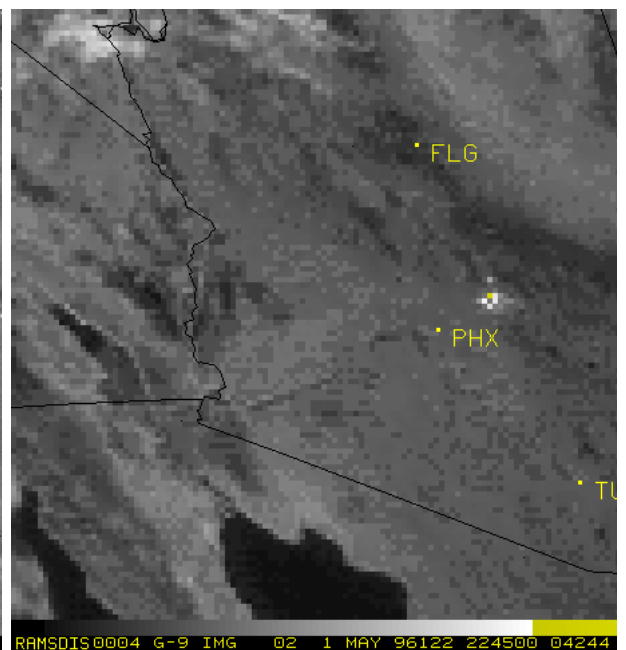Figure 3b. 3.9um image displayed at 1 km resolution (2245Z 1

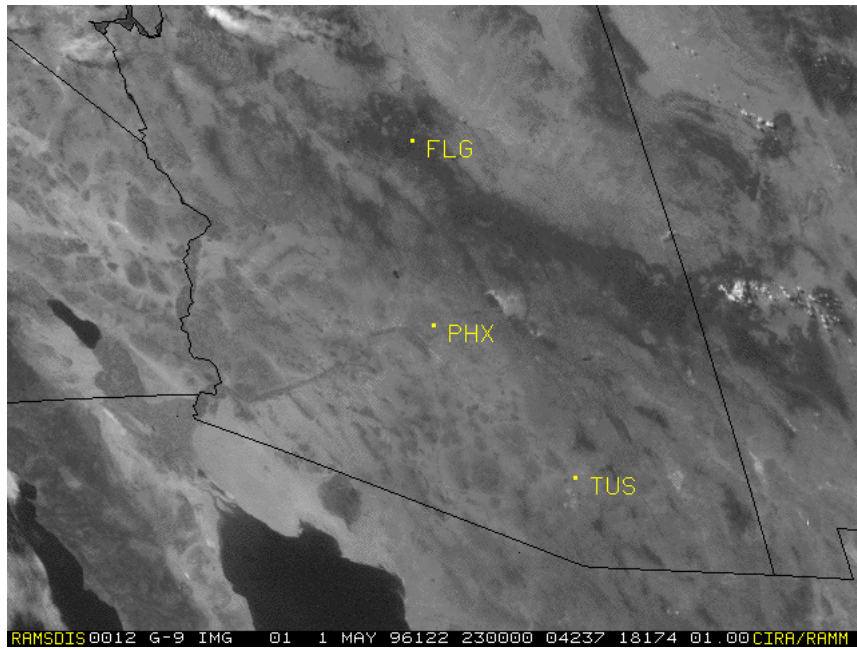FIGURE 3a. 1 km VIS imagery (2300Z 1 May 1996)

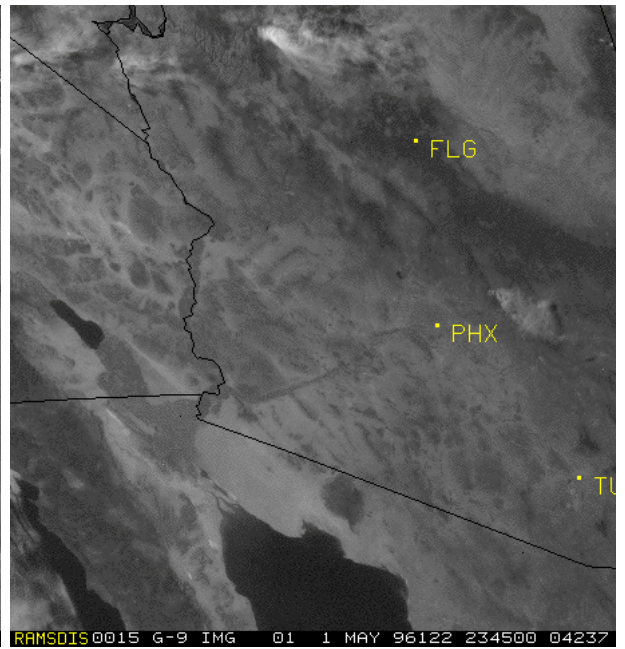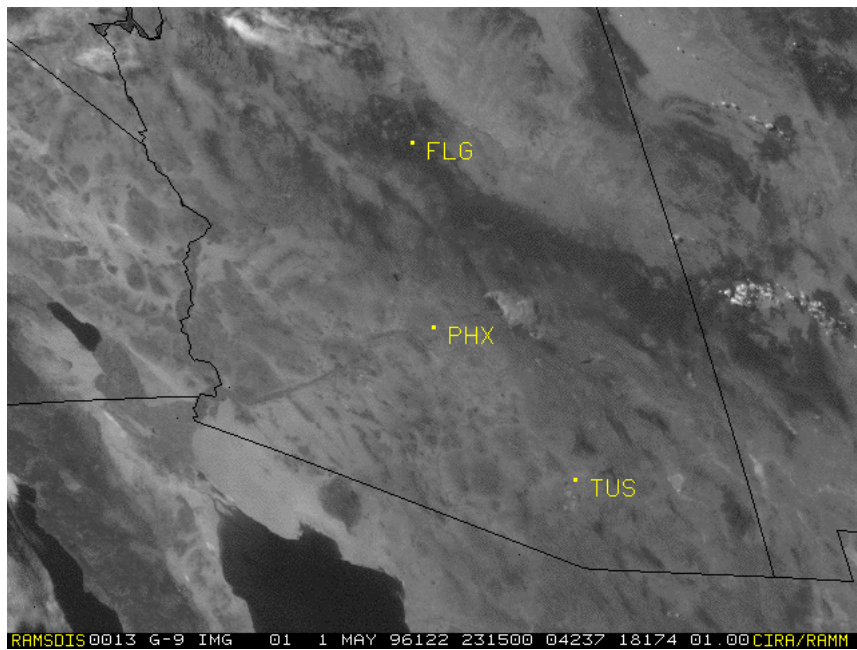Figure 4b. 3.9um image displayed at 1 km resolution (2300Z 1

RAMSDIS 0012 G-9 IMG   01   1 MAY 96122 230000 04237 18174 01.00 CIRA/RAMM

RAMSDIS 0015 G-9 IMG   01   1 MAY 96122 234500 04237

FIGURE 4a. 1 km VIS imagery (2315Z 1 May 1996)

Figure 5b. 3.9um image displayed at 1 km resolution (2315Z 1

RAMSDIS 0013 G-9 IMG   01   1 MAY 96122 231500 04237 18174 01.00 CIRA/RAMM

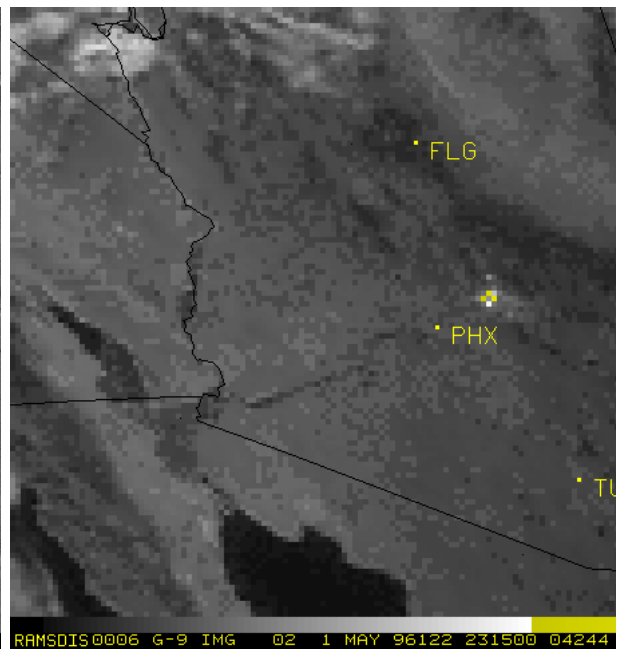RAMSDIS 0006 G-9 IMG   02   1 MAY 96122 231500 04244

FIGURE 5a. 1 km VIS imagery (2330Z 1 May 1996)

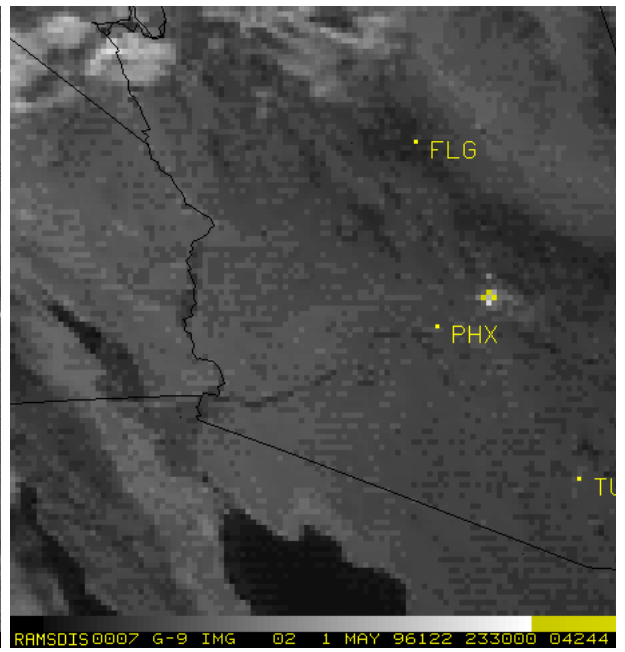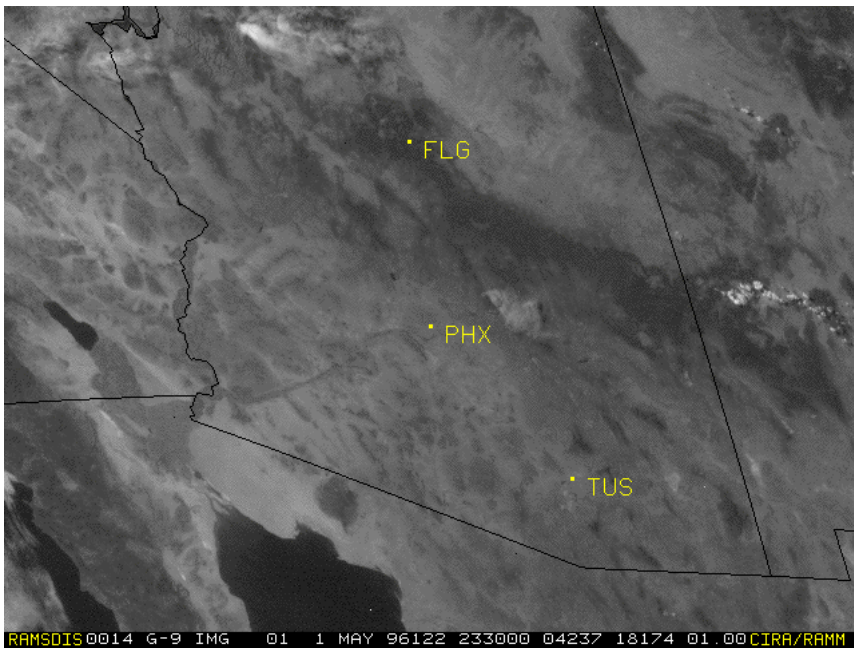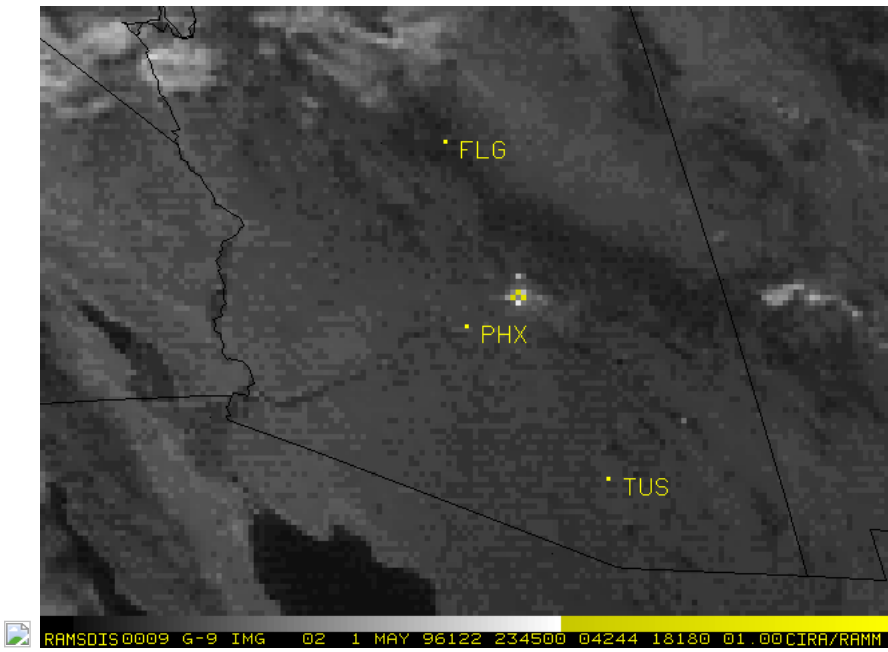Figure 6b. 3.9um image displayed at 1 km resolution (2330Z 1

FIGURE 6a. 1 km VIS imagery (2345Z 1 May 1996)

Figure 2b. 3.9um image displayed at 1 km resolution (2345Z 1

Please send comments to:Kevin J. Schrab