

## Filters on MCS

# MCSの中間赤外線フィルターの 検討状況

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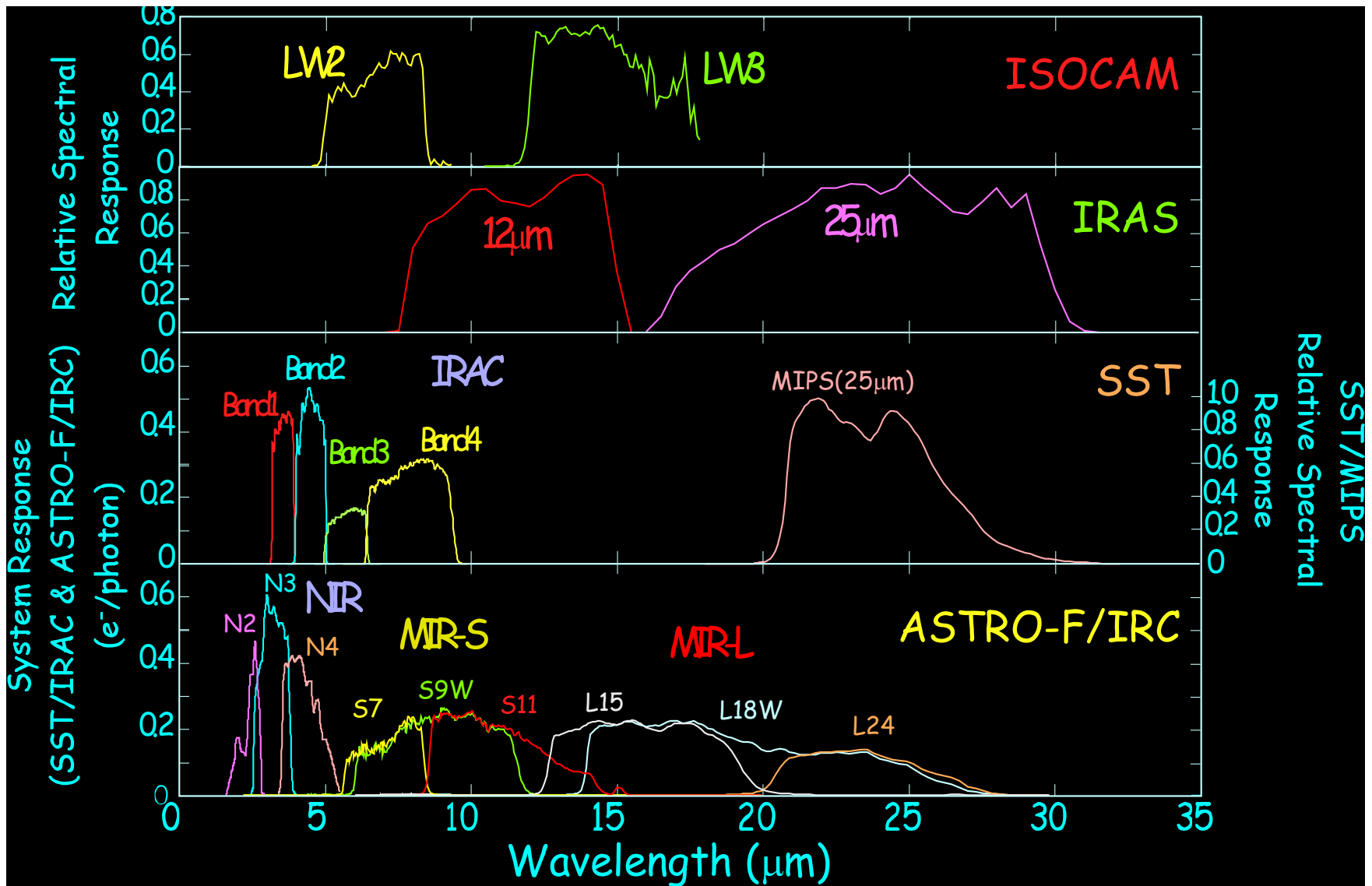
# Purpose of this presentation

- We are discussing what kind of filters we load into MCS-WFC.
- MCS-WFCにどのようなフィルターを準備するか議論中です。
- We want to hear your opinions about filters to maximize scientific outputs of MCS-WFS.
- MCS-WFCの科学的価値を最大にするためにフィルターに関するご意見を頂きたい。
- In this presentation, we do not concern ourselves about technical issues, even though they are challenging.
- 本講演は、フィルター制作の技術的問題は無視します。

# Current filter wheels

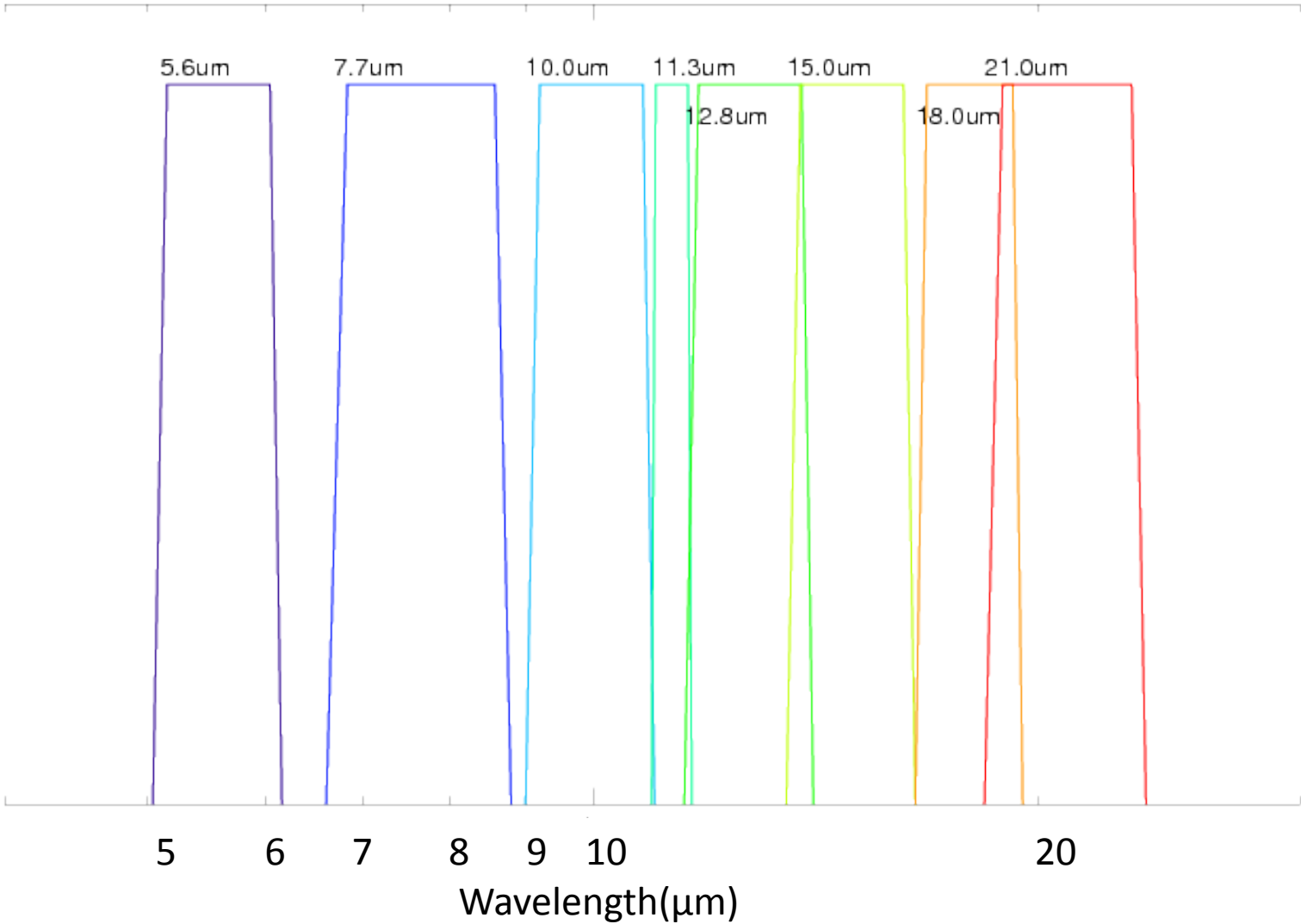
- Each channel has two 10-space wheels,
- each wheel need a hole,
- and there will be 17 spaces for filters and one for a dark plate.

# talk about the past



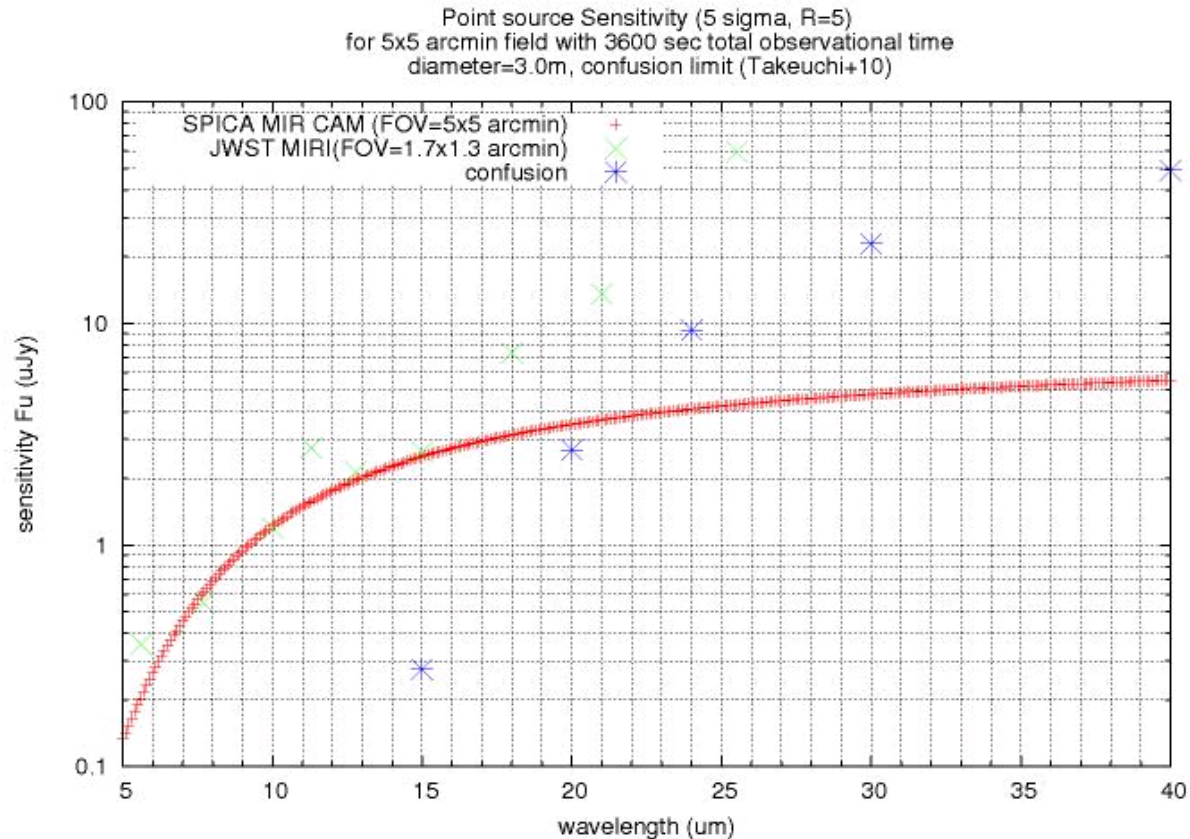
# MIRI on JWST

Oyabu made this image using the table on the MIRI web page.



# How do we think about filters?(1)

## Confusion limit (Sensitivity vs. Source density)

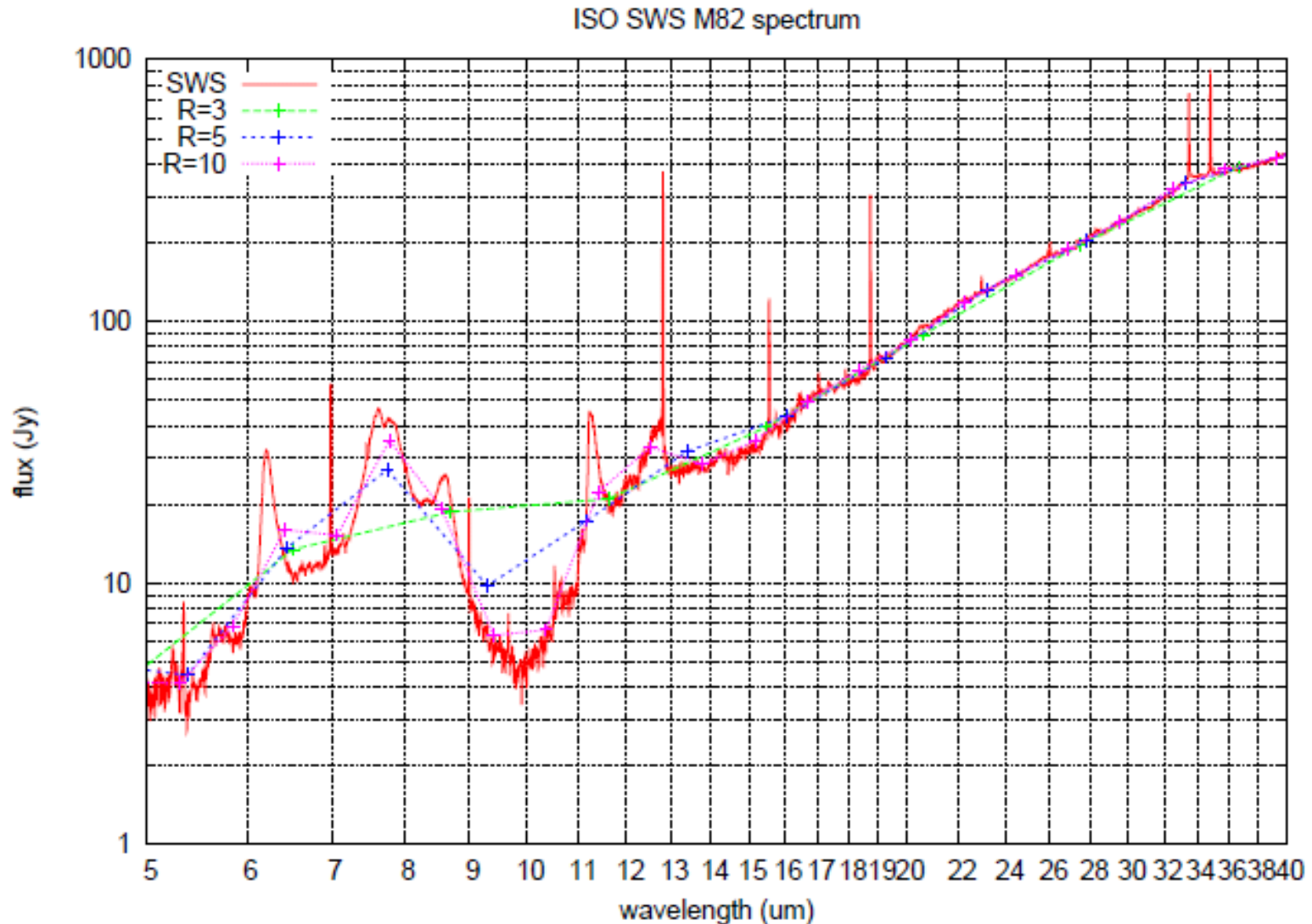


(Takeuchi et al. 2010)

- MIRACLE may reach confusion limit in a few minutes at 30um.
- The result tightly depends on models.

# How do we think about filters?(2)

In order to recognize broad features, we need  $R \sim 5-10$  filters.

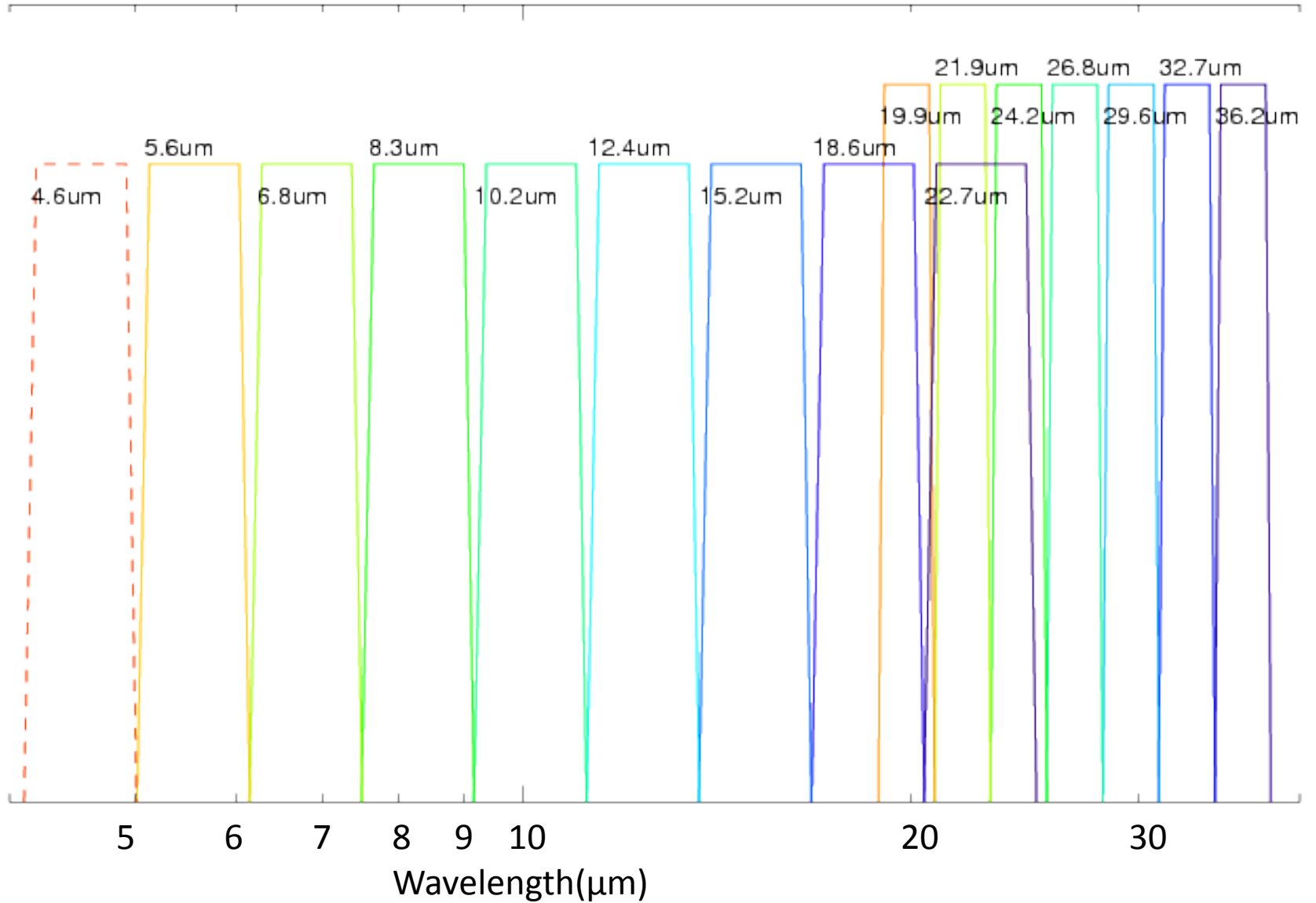


# Current concept (preliminary)

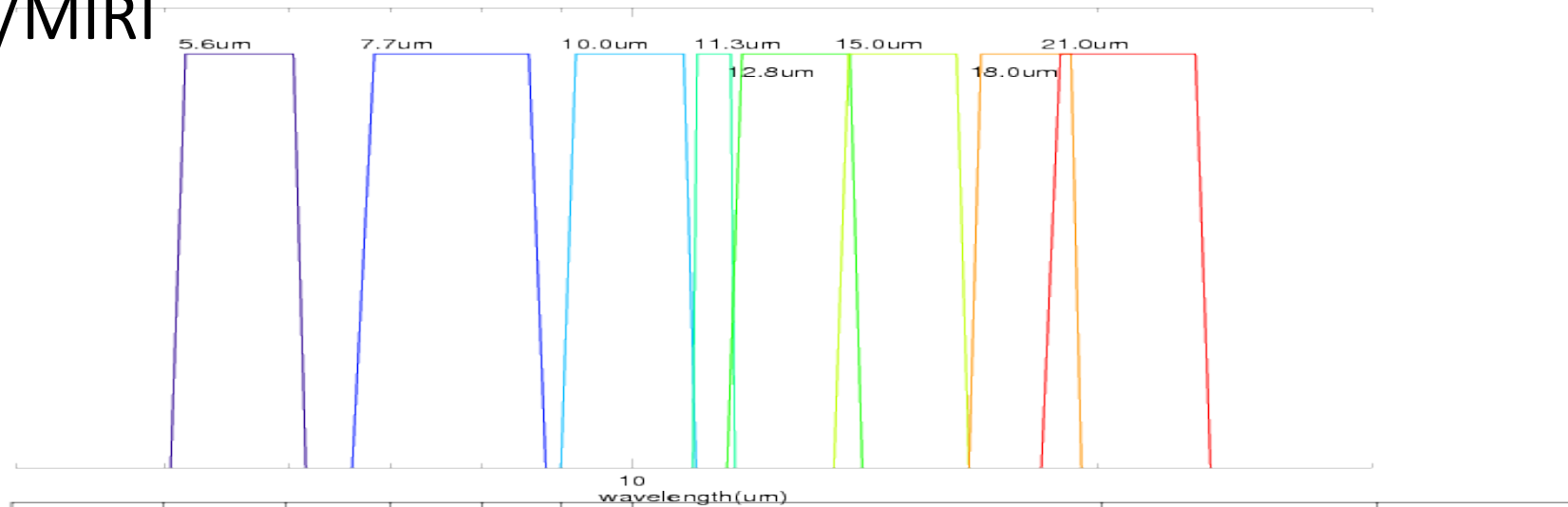
- Wada-san and Oyabu's philosophy:
  - Let's think about  $z > 1$  universe!
  - In shorter wavelength, the confusion limits are pretty low.
- WFC-S(5-25 $\mu$ m)
  - $R \sim 5$  for broad band filters
    - 8 filters(+1?)
- WFC-L(20-38 $\mu$ m)
  - $R \sim 10$  for broad band filters
    - 7 filters



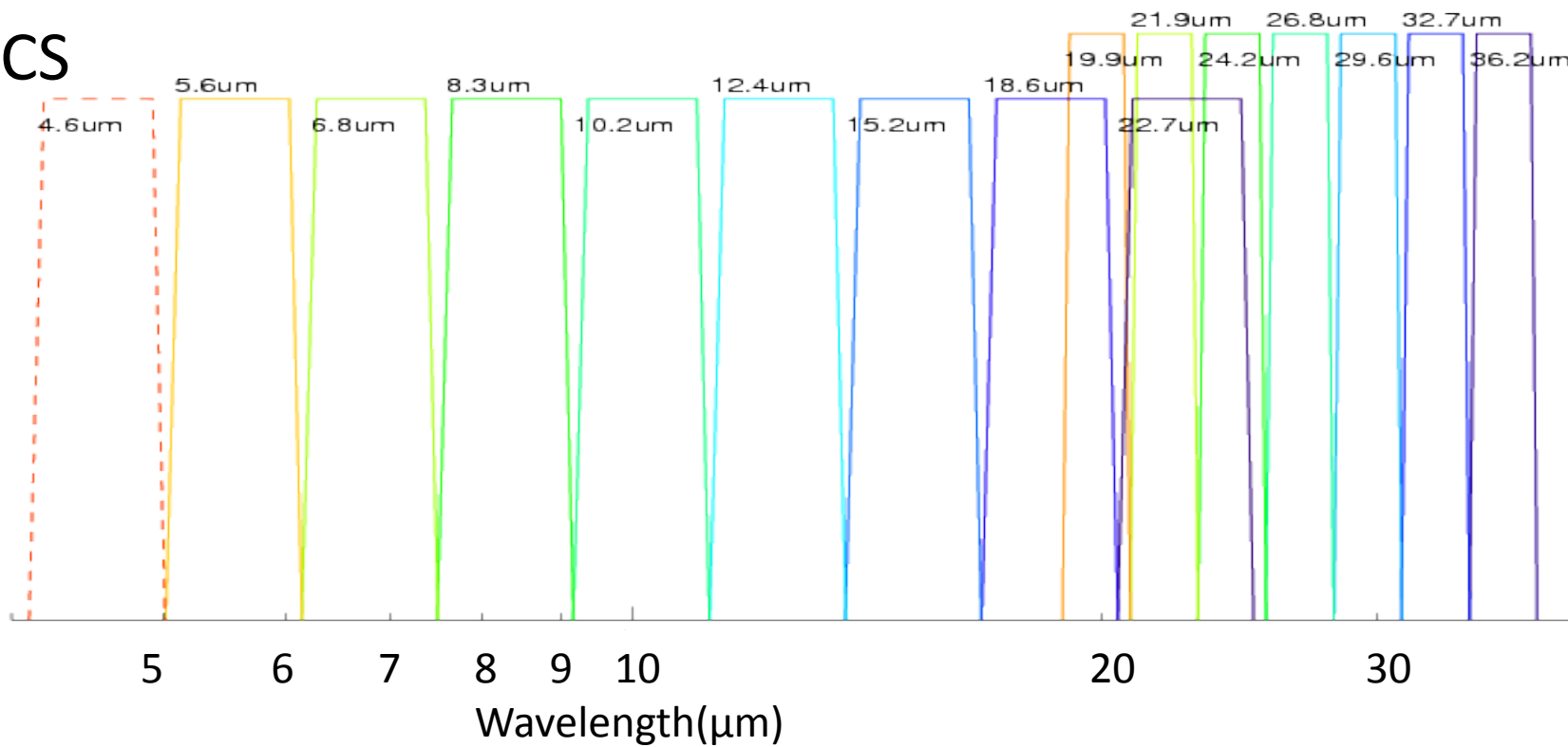
# MCS filters



# JWST/MIRI



# MCS



# How do we use open spaces? (1)

## (very very preliminary)

- For example,
    - WCS-S
      - Narrow band filters
        - 4.9 $\mu$ m for H $\beta$  at z=9.2 or H $\alpha$  at z=6.6
        - 6.7 $\mu$ m for H $\alpha$  at z=9.2
        - 9 $\mu$ m for silicate in our Galaxy
        - 7 $\mu$ m for PAH in our Galaxy
    - WCS-L
      - Narrow band filters
        - 28.22 for H<sub>2</sub> 0-0 S(0)
        - ~28.?? for H<sub>2</sub> 0-0 S(0) off
        - 17.03 for H<sub>2</sub> 0.0 S(1)
        - ~17.?? for H<sub>2</sub> 0.0 S(1) off
- They might be filters for WCS-S.

# How do we use open spaces? (2)

- Filters when [LMH]RS is used.
  - There are some possibilities of filter wheel in rear-optics.
- A filter( $\sim 2\mu\text{m}$ ) for the instrument test.
- .....

## A opinion

- Some filters should be the same as JWST, Spitzer or AKARI.
  - They can make the comparison easier and provide a chance of long-term monitor observations.

# Summary

- We have just stated to discuss filters for MCS-WFC.
- Any opinions and requests are appreciated.