

## Supplementary Material

### Performance of operational fire spread models in California

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## Supplementary materials

### S.1. Fuel types

Improved high-resolution surface fuel types (Scott and Burgan 2005; Table S1) and canopy characteristics maps (canopy cover, canopy height, canopy base height and canopy bulk density) at 30 m pixel resolution were generated to perform the fire simulations. The surface fuel maps were developed by Technosylva Inc. using an Object-based Image Analysis by grouping homogeneous vegetation areas into vector objects and later classified with machine learning algorithms (random forest) which have been trained with ground truth data. Overall, we used more than 10,000 plots distributed throughout California to calibrate and validate the models (70% for training and 30% of data for validation). We collected the fuel type in each plot as well as the canopy characteristics when possible. The fuel plots were collected through field inspections by the Technosylva team, and interpretation from both aerial imagery combined with Google Street View. The technical workflow used to develop the fuel maps is shown in Figure S1.

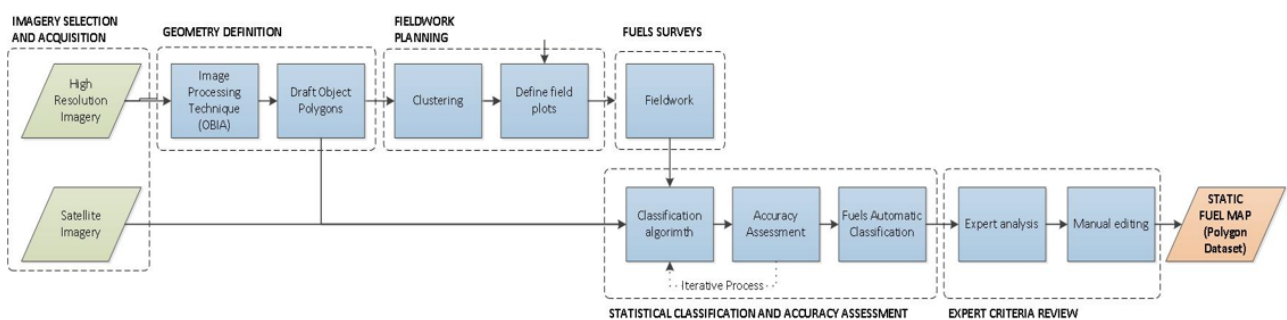


Figure S1. Fuels mapping project technical workflow. Green boxes represent input data sources. Blue boxes represent technical processes. The final fuels dataset is provided in both ArcGIS vector and raster formats.

*The accuracy assessment was first computed by major fuel types groups (non-burnable, grass, shrub and timber) and later by any specific fuel type. The accuracy to classify the burnable fuel types was higher than 90% in all of them..*

*Table S1. Percentage of each fuel type in California. The surface fuel maps were modelled by Technosylva Inc. based on an Object-based Image Analysis by grouping homogeneous vegetation areas into vector objects later classified with the Scott and Burgan (2005) fuel types.*

<i>Fuel type</i>	<i>Abundance (%)</i>
<i>No Burnable</i>	<i>20.58</i>
<i>101</i>	<i>2.80</i>
<i>102</i>	<i>9.19</i>
<i>103</i>	<i>&lt;0.01</i>
<i>104</i>	<i>&lt;0.01</i>
<i>121</i>	<i>4.28</i>
<i>122</i>	<i>21.26</i>
<i>141</i>	<i>13.19</i>
<i>142</i>	<i>0.46</i>
<i>143</i>	<i>&lt;0.01</i>
<i>144</i>	<i>1.86</i>
<i>145</i>	<i>2.41</i>
<i>146</i>	<i>&lt;0.01</i>
<i>147</i>	<i>1.65</i>

<i>161</i>	<i>0.11</i>
<i>162</i>	<i>0.03</i>
<i>163</i>	<i>2.60</i>
<i>165</i>	<i>14.65</i>
<i>181</i>	<i>0.02</i>
<i>182</i>	<i>0.51</i>
<i>183</i>	<i>1.38</i>
<i>184</i>	<i>0.04</i>
<i>185</i>	<i>0.03</i>
<i>186</i>	<i>1.80</i>
<i>187</i>	<i>0.02</i>
<i>188</i>	<i>0.61</i>
<i>189</i>	<i>0.52</i>
<i>201</i>	<i>&lt;0.01</i>
<i>202</i>	<i>&lt;0.01</i>